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URANIUM ENRICHMENT DEMAND CHARGES

COMPLETED

HEARING

BEFORE THE

SUBCOMMITTEE ON ENERGY RESEARCH AND PRODUCTION

OF THE

COMMITTEE ON SCIENCE AND TECHNOLOGY

U.S. HOUSE OF REPRESENTATIVES

NINETY-SEVENTH CONGRESS

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URANIUM ENRICHMENT DEMAND CHARGES

MONDAY, MARCH 8, 1982

HOUSE OF REPRESENTATIVES,
COMMITTEE ON SCIENCE AND TECHNOLOGY,
SUBCOMMITTEE ON ENERGY RESEARCH AND PRODUCTION,
Washington, D.C.

The subcommittee met, pursuant to call, at 1:30 p.m., in room 2318, Rayburn House Office Building, Hon. Marilyn Lloyd Bouquard (chairman of the subcommittee) presiding.

Mrs. BOUQUARD. The subcommittee will come to order. Before we begin I ask unanimous consent that pursuant to House rules, television and other recordings of today's hearings be permitted. I see no objection.

Good afternoon, ladies and gentlemen. Today is the subcommittee's first hearing on issues related to the Department of Energy's fiscal year 1983 annual budget request. The topic of today's session is Uranium Enrichment Demand Charges.

In fiscal year 1981 DOE operated the three gaseous diffusion plants at 37 percent capacity. It plans to do the same in fiscal years 1982 and 1983. Operating at this capacity requires about 2,660 megawatts of electrical energy for the year.

To supply this electricity, the Department of Energy has contracted with three electric utilities. The contractual arrangements, entered into some time ago, required the Department to take 3,060 megawatts of electricity for fiscal year 1981; and for each of fiscal years 1982 and 1983, to take 5,840 megawatts. In other words, DOE was contractually obligated to take 3,180 megawatts of electricty more than it needs in each of fiscal years 1982 and 1983.

The result in contracting for more power than is needed is that DOE must pay the supplier utility "demand charges," or in general terms "liquidated damages," which compensate the utilities for the facility costs that would otherwise have been recovered had the total amount of electricity contracted for been taken by the Department of Energy.

The contract demand charges in fiscal year 1981 were $43 million, and in fiscal years 1982 and 1983 they will be $206 and $151 million, respectively. The anticipated contract demand payments in fiscal years 1982 and 1983 are not the same, even though the unneeded power level is identical, because DOE has concluded an agreement with one of the supplier utilities for relief of the demand charges.

In today's hearing we hope to fully explore the nature of these charges, to establish for the record the Department's initiatives to mitigate these charges, and to explore estimates of future demand

charges. We will also hear from one of the supplier utilities so that we can more fully understand their perspective relative to demand charges.

Our first witnesses this afternoon will be two distinguished representatives of the Department of Energy, Dr. Shelby Brewer, the Assistant Secretary for Nuclear Energy, and Mr. William Voigt, the Acting Director of the Office of Uranium Enrichment and Assessment. Following these gentlemen will be Mr. Hugh Parris, the Manager of Power at the Tennessee Valley Authority, and Mr. Herbert Sanger, Jr., the General Counsel of the Tennessee Valley Authority.

Gentlemen, you may proceed.

STATEMENTS OF SHELBY T. BREWER, ASSISTANT SECRETARY FOR NUCLEAR ENERGY, DEPARTMENT OF ENERGY, AND WILLIAM R. VOIGT, JR., ACTING DIRECTOR, OFFICE OF URANIUM ENRICHMENT AND ASSESSMENT, DEPARTMENT OF ENERGY

Mr. BREWER. Thank you. I am most pleased to accompany Mr. Voigt today.

We would like to spend some time explaining in some detail the way we plan and do business in the enrichment enterprise. The U.S. enrichment enterprise is the largest single item in an operational and functional sense in the Department of Energy. It is truly the only profit center in the Department of Energy. It amounts to about $4 billion in cash flow, that is $2 billion in costs and about $2 billion in revenues.

It is large, and it is technically complex. We are operating as you know, three gaseous diffusion plants. We are constructing a very large gas centrifuge plant in Portsmouth and beyond that we have advanced technologies which we have under development and hope to be able to deploy sometime in the 1990's.

The central and perhaps dominant factor for consideration in planning and managing this entire enrichment enterprise is the cost of power to the gaseous diffusion plants. This is what we are here today to discuss.

The gaseous diffusion process is a power guzzler. Production costs escalate with the price of coal, and this is the principal reason why we are moving toward gas centrifuge technology, and laser isotope separation technology.

One of the key elements of our strategy, as Mr. Voigt will bring out, is that we are trying to minimize our power loading into the gaseous diffusion plants. It is more economic, as he will show, not to preproduce at the gaseous diffusion plants, but, instead, to defer production until the more economic gas centrifuge plant is on line.

Without any further introduction, I would like to call on Mr. Voigt to present his statement.

Mrs. BOUQUARD. Please proceed, Mr. Voigt.

Mr. VOIGT. Thank you, Madam Chairman.

In my testimony today I plan to speak today on three general but very interrelated topics, the first being the domestic and foreign demand for uranium enrichment services.

Second, the latest uranium enrichment operating plan which was completed in December 1981 and supports the fiscal year 1983

budget, and third, the uranium enrichment electric power contracts and the proposed payment of capacity charges for contract power not purchased.

I hope my statement today will clear up any questions concerning our management of the enrichment enterprise. Turning first to the demand section, we update our demand forecasts on an annual basis to coincide with the budget cycle. Our latest estimate, made last summer, of domestic and non-U.S. nuclear electric generating capacity that will be served by the United States uranium enrichment complex is shown in table 1 of my testimony.

As indicated on the table, we expect the combined domestic and foreign on-line nuclear power capacity to be served by U.S. enrichment capacity to increase to 124–151 gigawatts by 1985, to 172–196 gigawatts by 1990, and to 197–254 gigawatts by 1995.

Our midcase estimates are lower than those presented last year by 7 gigawatts in 1985, 9 gigawatts in 1990, and 5 gigawatts in 1995. These lowered expectations reflect delay and/or cancellation of nuclear powerplant construction by some utilities.

The domestic forecast is based on a detailed examination of each reactor that is either planned, ordered, under construction, or operating. It considers such factors as the current construction and licensing status, the length of time that would be needed to complete the project based on Nuclear Regulatory Commission historical data, and financial, environmental and load-growth effects.

The estimates of non-U.S. nuclear power growth were derived in an analogous manner. An assessment was also made on the likelihood of current customers remaining with the United States, as well as the potential for obtaining contracts for new reactors.

The demand for separative work in the near term reflects specific contractual data. For the longer term, separative work demand is determined using standardized boiling water and pressurized water once-through-cycle reactor models, as well as historical lead time information.

Enrichment demand also includes Government needs; that is, the naval reactor program, nuclear research and development programs, the defense related production reactor program and the weapons program.

Our estimates of naval reactor and R. & D. needs, which reflect estimates provided by the program offices, are relatively stable. Production reactor and weapons need estimates are less certain. The requirements used are based on the classified estimates provided to the Office of Uranium Enrichment and Assessment by the Assistant Secretary for Defense Programs.

Table 2 highlights, in 5-year increments, the separative work demand that coincides with the current mid-case estimate of nuclear power growth.

Turning now to the uranium enrichment operating plan, we have revised our long-range operating plan to reflect changes in demand and other events which have occurred in the last year. This particular plan was selected after detailed examination and evaluation of a large number of alternative plans.

The economic criterion upon which our planning is based is to minimize costs, both to the Government and to the customer, over the long term. The specific criteria used to evaluate the alternative

plans included: impact on SWU price, minimization of the costs of producing enriched uranium, and minimization of customer costs for enriched uranium.

The current plan basically uses the same strategy determined from the exhaustive analyses conducted in the October 1980 uranium enrichment strategy study. Our current analyses show that this strategy is still valid. The strategy was chosen after considering the economics, operational risks, and flexibilities associated with different operating plans and demand levels.

In doing our analysis, the major tradeoff considerations included the pace of the gas centrifuge enrichment plant (GCEP), the advanced isotope separation program and the gaseous diffusion complex power levels in both the near and long term.

In the short term, the most desirable strategy is to lower the operating levels of the gaseous diffusion complex. This requires power purchases below existing contract levels and quickly reduces inventories of enriched uranium to the minimum 90-day working inventory level. Even though this will require the Department to pay capacity charges to its power suppliers for power not purchased, it remains the most economical way to operate in the long term.

In fiscal year 1983 the complex will operate at the same power levels as in fiscal year 1982. These levels represent an acceptable level of risk of equipment failures from prolonged operations below plant design levels.

The payment of capacity charges represents, under current conditions, the most economical means of operating the uranium enrichment complex over the long term. We evaluated numerous scenarios including, first, deferring substantially the GCEP by preproducing, and second, maintaining the current GCEP schedule and purchasing contract power in the near term and reducing power in the 1990's when it could be done without payment of capacity charges.

In all cases, Madam Chairman, preproduction in lieu of payment of near-term capacity charges resulted in higher long-term departmental and customer costs on both a discounted and undiscounted cost basis.

The current operating plan calls for increasing gaseous diffusion production in the post fiscal year 1983 timeframe. In the period through fiscal year 1986, we plan to operate the plants at a constant power level of 4,360 megawatts as opposed to the minimum level of 2,660 megawatts, at which we have been operating the plants in both for 1982 as well as 1983.

This planned level is still below the contract level but permits all gaseous diffusion plant equipment improved in the Cascade Improvement Program to be operational. This alleviates any technical concern of equipment degradation with long-term shutdown and reduces the risk of plant damage due to operation at levels far below their design level.

The long-term strategy also calls for the continued design and construction of the GCEP at Portsmouth, Ohio. The GCEP will provide an additional 2.2 million separative work units of capacity by 1989. Additional capacity will be added in increments as dictated by demand or economics, with completion of the full GCEP currently projected for 1994. This is the same schedule as was present-

ed in the fiscal year 1982 budget. By the mid-1990's, some of the gaseous diffusion production will be replaced by the less costly GCEP production.

I would now like to discuss our electric power contracts and the projected payment of capacity charges for contract power not purchased.

The Department's long-term contracts with its three power suppliers—Tennessee Valley Authority (TVA), Electric Energy, Inc. (EEI), and Ohio Valley Electric Corp. (OVEC)—are essentially standard industrial contracts.

Power is supplied from the TVA system to the Oak Ridge and Paducah plants. EEI and OVEC are firms set up especially to supply power to the Paducah and Portsmouth plants, respectively. EEI, which is sponsored by four utilities, operates one generating station in Illinois.

OVEC, which is sponsored by 15 utilities, operates 2 generating stations—1 in Indiana and 1 in Ohio.

Our contracts with TVA are based on standard system rates with one exception. The TVA Act requires TVA to pay to the States in which it operates an amount equal to 5 percent of the revenues derived from sales to all customers except to Federal agencies.

Since the Department's contracts are based on standard rates, the bill calculated using the rates is reduced 5 percent to reflect this in lieu-of-tax payment. With the other two suppliers, the Department pays its proportionate share of the costs. The costs applicable to the ownership, operation, and maintenance of the plants are shared on the basis of the capacity ratio in effect. Energy costs are shared in proportion to the actual energy usage.

The terms of all three contracts run into the early 1990's and provide for termination with sufficient notice to allow the power suppliers sufficient time to integrate the released power into their capacity expansion plans. The termination times for these contracts are 8 years for TVA, 10 years for EEI, and 5 years for OVEC.

Turning now to capacity charges, termination or reduction of the Department's contract demand sooner than allowed in the contracts requires the payment of capacity charges for the power not purchased. Relief from the capacity charges requires agreement by the utilities and depends on their assessment of the following factors:

The capacity/load relationship for the utilities during the termination or reduction period.

The utility's view of lost revenues, if any, and the effect on all other customers.

The utility's ability to justify its decision to a regulatory authority—the TVA Board of Directors for TVA and the State public utility commissions and the Federal Energy Regulatory Commission (FERC) for the sponsoring utilities of EEI and OVEC.

The capacity charges for power not purchased are based on that portion of the Department's contract demand which we do not purchase. For example, in fiscal year 1982 the Department's contract demand with TVA is 3,165 megawatt-years. We plan on purchasing 1,799 megawatt-years of power from TVA. Hence, we would pay capacity charges for power not purchased on the difference, which is 1,366 megawatt-years. I should point out that these capacity

charges are a regular part of the billing from all three suppliers. For every megawatt we purchase, we pay a capacity charge and an energy charge. If we choose not to purchase power, we are relieved from paying the energy charge, but we are contractually obligated to pay the capacity charge.

These capacity charges are the minimum costs we are obligated to pay. By paying these charges, the suppliers make the generating capacity available to supply us the energy. The capacity charges could be thought of as a deposit. If we elect to purchase power, we pay the capacity charges and the energy charges. If we elect not to buy the power, we lose our deposit.

Turning now to our negotiations thus far, with the exception of TVA in fiscal years 1981 and 1982, the Department has been able to reduce contract power deliveries under letter agreements and contract modifications with the three suppliers. For the period fiscal years 1980 to 1989, the Department has negotiated relief from an estimated $492 million in capacity charges. A tabulation of these capacity charges is provided in table 3.

Negotiations with TVA have not been successful and the Department paid $27 million to TVA in capacity charges for energy not purchased in fiscal year 1981. The estimated capacity charges to TVA in fiscal year 1982 for energy not purchased are $111 million.

As I stated earlier, under the operating plan completed in December 1981, the Department will be paying capacity charges for power not purchased over the fiscal years 1982 to 1986 period. The total for this 5-year period is estimated to be $777 million. As mentioned earlier, $111 million will be paid in fiscal year 1982. The recently submitted fiscal year 1983 budget is based upon the payment of $151 million in capacity charges for power not purchased.

Of that total, that is the $151 million, $129 million will be paid to TVA and $22 million will be paid to OVEC. We have formally requested OVEC to reduce our contract demand in fiscal year 1983 and give us relief from these charges. OVEC and its sponsors have the request under consideration. A tabulation of these capacity charges for fiscal years 1980 through 1988 is provided in table 4.

The Department has every intention to seek relief from the capacity charges for power not purchased for that period of time—that is, the 1982 to 1986 time frame. Negotiations have been held with the suppliers since March 1980 on the matter and they will continue. The suppliers can only grant us relief if they have another market for the power.

OVEC's success in finding a market will depend heavily on the level of economic activity in the Midwest. TVA has had extensive discussions with neighboring utilities in an attempt to market its excess capacity. To date, TVA has had little or no success and has notified DOE that we must meet our contractual commitments.

As in the past, we will keep the channels of communication open with the suppliers. We will continue to offer any assistance we can to help them find a market for the power which is surplus to our needs.

In closing, I would like to reemphasize three points, Madam Chairman.

First, the enrichment enterprise has in the past and will continue in the future to balance its operational mix of enrichment tech-

nologies to produce separative work at the lowest possible cost for our customers. This policy will be followed in conjunction with our policy of full cost recovery.

Second, this strategy will require purchasing less power in the near term than we are contractually committed to.

Last, we will continue our negotiations with the power suppliers to minimize, to the extent possible, the level of capacity charges for power not purchased.

[The prepared statement of William R. Voigt follows:]

TESTIMONY OF
WILLIAM R. VOIGT, JR., ACTING DIRECTOR
OFFICE OF URANIUM ENRICHMENT AND ASSESSMENT
DEPARTMENT OF ENERGY
BEFORE
THE SUBCOMMITTEE ON ENERGY
RESEARCH AND PRODUCTION
COMMITTEE ON SCIENCE AND TECHNOLOGY
UNITED STATES HOUSE OF REPRESENTATIVES
MARCH 8, 1982

INTRODUCTION

I am pleased to have this opportunity to appear before the Subcommittee on Energy Research and Production today to report on the Department's Uranium Enrichment Activities emphasizing our long-range strategy for uranium enrichment production. I plan to speak today on three general, but interrelated, topics:

1. The domestic and foreign demand for U.S. uranium enrichment services,

2. The latest uranium enrichment operating plan which was completed in December 1981 and supports the Fiscal Year 1983 budget, and

3. The uranium enrichment electric power contracts and the proposed payment of capacity charges for contract power not purchased.

I hope my statement today will clear up any questions concerning our management of the enrichment enterprise.

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URANIUM ENRICHMENT DEMAND

The Office of Uranium Enrichment and Assessment (OUEA) updates its demand forecasts on an annual basis to coincide with the budget cycle. Our latest estimate, made last summer, of domestic and non-U.S. nuclear electric generating capacity that will be served by the United States uranium enrichment complex is shown in Table 1. As indicated on the table, we expect the combined domestic and foreign on-line nuclear power capacity to be served by U.S. enrichment capacity to increase to 124-151 gigawatts by 1985, to 172-196 gigawatts by 1990, and to 197-254 gigawatts by 1995. Our mid-case estimates are lower than those presented last year by 7 gigawatts in 1985, 9 gigawatts in 1990, and 5 gigawatts in 1995. These lowered expectations reflect delay and/or cancellation of nuclear power plant construction by some utilities.

The domestic forecast is based on a detailed examination of each reactor that is either planned, ordered, under construction, or operating. It considers such factors as the current construction and licensing status, the length of time that would be needed to complete the project based on Nuclear Regulatory Commission

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historical data, and financial, environmental and load-growth effects. The estimates of non-U.S. nuclear power growth were derived in a analogous manner. An assessment was also made on the likelihood of current customers remaining with the United States as well as the potential for obtaining contracts for new reactors.

The demand for separative work in the near term reflects specific contractual data. For the longer term, separative work demand is determined using standarized boiling water and pressurized water once-through-cycle reactor models and historical lead time information. Enrichment demand also includes Government needs; that is, the Naval Reactor program, nuclear research and development programs, the defense related production reactor program and the weapons program. Our estimates of Naval Reactor and R&D needs, which reflect estimates provided by the program offices, are relatively stable. Production reactor and weapons need estimates are less certain. The requirements used are based on the classified estimates provided to the Office of Uranium Enrichment and Assessment by the Assistant Secretary for Defense Programs. Table 2 highlights, in five-year increments, the separative work (SWU) demand that coincides with the current mid-case estimate of nuclear power growth.

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URANIUM ENRICHMENT OPERATING PLAN

We have revised our long-range operating plan to reflect changes in demand and other events which have occurred in the last year. This particular plan was selected after detailed examination and evaluation of a large number of alternative plans. The economic criterion upon which our planning is based is to minimize costs, both to the Government and to the customer, over the long term. The specific criteria used to evaluate the alternative plans included:

- Impact on SWU price
- Minimization of the costs of producing enriched uranium
- Minimization of customer costs for enriched uranium

The current plan basically uses the same strategy determined from the exhaustive analyses conducted in the October 1980 Uranium Enrichment Strategy Study. Our current analyses show that this strategy is still valid. The strategy was chosen after considering the economics, operational risks, and flexibilities associated with different operating plans and demand levels. In doing our analysis, the major tradeoff considerations included the pace of the Gas Centrifuge Enrichment Plant (GCEP), the Advanced Isotope Separation program and the gaseous diffusion complex power levels in both the near and long term.

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In the short term, the most desirable strategy is to lower the operating levels of the gaseous diffusion complex. This requires power purchases below existing contract levels and quickly reduces inventories of enriched uranium to the minimum 90-day working inventory level. Even though this will require the Department to pay capacity charges to its power suppliers for power not purchased, it remains the most economical way to operate in the long term. In FY 1983, the complex will operate at the same power levels as in FY 1982. These levels represent an acceptable level of risk of equipment failures from prolonged operations below plant design levels.

The payment of capacity charges represents, under current conditions, the most economical means of operating the uranium enrichment complex over the long term. We evaluated numerous scenarios including (1) deferring substantially the GCEP by pre-producing and (2) maintaining the current GCEP schedule and purchasing contract power in the near term and reducing power in the 1990's when it could be done without payment of capacity charges. In all cases, pre-production in lieu of payment of near-term capacity charges resulted in higher long-term departmental and customer costs on both a discounted and undiscounted cost basis.

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The current operating plan calls for increasing gaseous diffusion production in the post FY 1983 timeframe. In the period through FY 1986, we plan to operate the plants at a constant power level of 4,360 megawatts as opposed to the minimum level of 2,660 megawatts. This planned level is still below the contract level but permits all gaseous diffusion plant equipment improved in the Cascade Improvement Program (CIP) to be operational. This alleviates any technical concern of equipment degradation with long-term shutdown and reduces the risk of plant damage due to operation at levels far below their design level.

The long-term strategy also calls for the continued design and construction of the GCEP at Portsmouth, Ohio. The GCEP will provide an additional 2.2 million separative work units (SWU) of capacity by 1989. Additional capacity will be added in increments as dictated by demand or economics, with completion of the full GCEP (eight process buildings) currently projected for 1994. This is the same schedule as was presented in the FY 1982 budget. By the mid-1990's, some of the gaseous diffusion production will be replaced by the less costly GCEP production.

ELECTRIC POWER CONTRACTS

I would now like to discuss our electric power contracts and the projected payment of capacity charges for contract power not purchased.

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The Department's long-term contracts with its three power suppliers--Tennessee Valley Authority (TVA), Electric Energy, Incorporated (EEI), and Ohio Valley Electric Corporation (OVEC)--are essentially standard industrial contracts. Power is supplied from the TVA system to the Oak Ridge and Paducah plants. EEI and OVEC are firms set up especially to supply power to the Paducah and Portsmouth plants, respectively. EEI, which is sponsored by four utilities, operates one generating station near Joppa, Illinois. OVEC, which is sponsored by fifteen utilities, operates two generating stations--one near Madison, Indiana and one near Gallipolis, Ohio.

Our contracts with TVA are based on standard system rates with one exception. The TVA Act requires TVA to pay to the States in which it operates an amount equal to five percent of the revenues derived from sales to all customers except to Federal agencies. Since the Department's contracts are based on standard rates, the bill calculated using the rates is reduced five percent to reflect this in lieu-of-tax payment. With the other two suppliers, the Department pays its proportionate share of the costs. The costs applicable to the ownership, operation, and maintenance of the plants are shared on the basis of the capacity ratio in effect. Energy costs are shared in proportion to the actual energy usage.

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The terms of all three contracts run into the early 1990's and provide for termination with sufficient notice to allow the power suppliers sufficient time to integrate the released power into their capacity expansion plans. The termination times for these contracts are 8 years for TVA, 10 years for EEI, and 5 years for OVEC.

CAPACITY CHARGES FOR POWER NOT PURCHASED

Termination or reduction of the Department's contract demand sooner than allowed in the contracts requires the payment of capacity charges for the power not purchased. Relief from the capacity charges requires agreement by the utilities and depends on their assessment of the following factors:

- The capacity/load relationship for the utilities during the termination or reduction period.
- The utilities' view of lost revenues, if any, and the effect on all other customers.
- The utilities ability to justify its decision to a regulatory authority - the TVA Board of Directors for TVA and the state public utility commissions and the Federal Energy Regulatory Commission (FERC) for the sponsoring utilities of EEI and OVEC.

The capacity charges for power not purchased are based on that portion of the Department's contract demand which we do not purchase. For example, in Fiscal Year 1982 the Department's

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contract demand with TVA is 3,165 megawatt-years. We plan on purchasing 1,799 megawatt-years of power from TVA. Hence, we would pay capacity charges for power not purchased on the difference, which is 1,366 megawatt-years. I should point out that these capacity charges are a regular part of the billing from all three suppliers. For every megawatt we purchase, we pay a capacity charge and an energy charge. If we choose not to purchase power, we are relieved from paying the energy charge, but we are contractually obligated to pay the capacity charge. These capacity charges are the minimum costs we are obligated to pay. By paying these charges, the suppliers make the generating capacity available to supply us the energy. The capacity charges could be thought of as a deposit. If we elect to purchase power, we pay the capacity charges and the energy charges. If we elect not to buy the power, we lose our deposit.

NEGOTIATIONS WITH THE POWER SUPPLIERS

With the exception of TVA in Fiscal Year 1981 and 1982, the Department has been able to reduce contract power deliveries under letter agreements and contract modifications with the three suppliers. For the period Fiscal Years 1980 to 1989, the Department has negotiated relief from an estimated $492 million in capacity charges. A tabulation of these capacity charges is provided in Table 3.

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Negotiations with TVA have not been successful and the Department paid $27 million to TVA in capacity charges for energy not purchased in Fiscal Year 1981. The estimated capacity charges to TVA in Fiscal Year 1982 for energy not purchased are $111 million.

As I stated earlier, under the operating plan completed in December 1981, the Department will be paying capacity charges for power not purchased over the Fiscal Year 1982 to 1986 period. The total for this five year period is estimated to be $777 million. As mentioned earlier, $111 million will be paid in Fiscal Year 1982. The recently submitted Fiscal Year 1983 budget is based upon the payment of $151 million in capacity charges for power not purchased. Of the total for Fiscal Year 1983, $129 million will be paid to TVA and $22 million will be paid to OVEC. We have formally requested OVEC to reduce our contract demand in Fiscal Year 1983 and give us relief from these charges. OVEC and its sponsors have the request under consideration. A tabulation of these capacity charges for Fiscal Years 1980 through 1988 is provided in Table 4.

The Department has every intention to seek relief from the capacity charges for power not purchased for the Fiscal Year 1982 to 1986 period. Negotiations have been held with the suppliers since March 1980 on the matter and they will continue. The suppliers can only grant us relief if they have another

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market for the power. OVEC's success in finding a market will depend heavily on the level of economic activity in the Midwest. TVA has had extensive discussions with neighboring utilities in an attempt to market its excess capacity. To date, TVA has had little or no success and has notified DOE that we must meet our contractual commitments. As in the past, we will keep the channels of communication open with the suppliers. We will continue to offer any assistance we can to help them find a market for the power which is surplus to our needs.

SUMMARY

In closing, I would like to reemphasize three points:

- The enrichment enterprise has in the past and will continue in the future to balance its operational mix of enrichment technologies to produce separative work at the lowest possible cost for our customers. This policy will be followed in conjunction with our policy of full cost recovery.

- This strategy will require purchasing less power in the near term than we are contractually committed to.

- We will continue our negotiations with the power suppliers to minimize, to the extent possible, the level of capacity charges for power not purchased.

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Table 1

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INSTALLED NUCLEAR GENERATING CAPACITY
SERVICED BY U.S. ENRICHMENT CAPACITY
AUGUST 1981 PROJECTION

(Net Gigawatts Electrical)

	U.S.			Non-U.S.			Total		
	Low	Mid	High	Low	Mid	High	Low	Mid	High
1980	50	50	50	34	34	34	84	84	84
1985	80	90	99	44	47	52	124	137	151
1990	117	122	126	55	60	70	172	182	196
1995	130	140	150	67	86	104	197	226	254

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Table 2

SEPARATIVE WORK DEMAND REQUIREMENTS
AUGUST 1981 PROJECTIONS

Fiscal Year	(Millions of SWU) U.S.*	Non-U.S.	Total
1985	16	8	24
1990	17	8	25
1995	19	12	31

*Includes U.S. Government Needs

Table 3

Capacity Charge Relief

$ Million

FY	TVA	EEI	OVEC	TOTAL
80	26	9	67	102
81	27	11	55	93
82	--	24	50	74
83	--	26	34	60
84	--	--	34	34
85	--	--	33	33
86	--	--	33	33
87	--	--	28	28
88	--	11 1/	13	24
89	--	11 1/	--	11
			TOTAL	492

1/ If EEI exercises its options to make reductions in these years.

NOTE: FY 1983-89 in FY 1983 dollars.

Table 4

Capacity Charges for Power
Not Purchased Which DOE
Will Pay

$ Millions

FY	TVA	EEI	OVEC	TOTAL
80	--	--	--	--
81	27	--	--	27
82	111	--	--	111
83	129	--	22	151
84	129	--	--	129
85	193	--	--	193
86	193	--	--	193
87	--	--	--	--
88	--	--	--	--
			TOTAL	804

NOTE: FY 1983-89 in FY 1983 dollars.

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Mr. VOIGT. That concludes my statement. I will be more than happy to answer any questions you may have.

Mrs. BOUQUARD. Thank you very much.

We are happy our subcommittee's ranking Republican Member, Mr. Lujan, is present. Mr. Lujan do you have any opening remarks?

Mr. LUJAN. Yes; I do. I will submit them for the record.

STATEMENT OF HON. MANUEL LUJAN, JR.

Thank you, Madam Chairman. As you know, I am very interested in issues concerning the uranium enrichment capability in the United States. Unfortunately, this hearing would not have been necessary if the projections made 10 years ago had been able to accurately predict the decrease in domestic and foreign demand for U.S. uranium enrichment services. But hindsight is always better than foresight. Now we find ourselves contractually obligated to pay demand charges for the electricity we don't plan on using.

Several alternatives can or have been considered. First, we can simply pay these demand charges as agreed under the contracts made with TVA. However, this does represent a cost of $129 million in fiscal year 1983 and fiscal year 1984 with a jump to $193 million in fiscal year 1985 and fiscal year 1986. Anyone who has participated in the strenuous exercise of trimming the Federal budget realizes that an expenditure this large hurts, especially when we don't perceive receiving anything of value for these dollars. All of us know of many worthy programs we would like to see funded with $129 million. However, the demand charges were agreed to in the DOE contract with TVA with good reasons, as I hope our witnesses from TVA, Mr. Parris and Mr. Sanger, will explain.

Another alternative is to go ahead and use the full amount of electricity we are allowed under the contract to enrich uranium. The excess uranium could be stockpiled to level the requirements for later years. This has the advantage that it would help out the U.S. uranium mining and milling industry, who are currently suffering from a massive depression. We also get something back for the money to save money, because we would have to pay additional fuel charges and plant operating costs. So there is the disadvantage that we don't relieve the budgetary pressures that concern us all.

A final alternative is to find another customer for this excess electricity. If somewhere in the Federal system, such as with the Strategic Petroleum Reserve, there is a need for power presently not covered under contract, and if the TVA can reasonably wheel power to these potential users, then we have saved the Federal Government some money. Similarly, if we could find a non-Government customer for the excess electricity, we can argue that relieving DOE of the demand charge does not cause a burden on TVA. These types of alternatives may not be legally or economically possible, however.

I would also like to take this opportunity to welcome our colleague from Pennsylvania, Mr. Walker, who is here to explore the possibility that excess electrical energy from TVA might be made available to GPU, the owner and operator of the crippled Three Mile Island nuclear reactor.

When Mr. Walker approached me to discuss this possibility last week I told him that it was certainly an idea that merited a close examination by our committee. Since that time there have been several events which may make any discussion moot, including the cancellation of three nuclear plants by TVA.

However, I do want to commend Mr. Walker for his diligence in working to protect the people of Pennsylvania. He has always been attentive to their needs and serves as an excellent spokesman for all of Pennsylvania.

I am looking forward to discussing these issues with our witnesses today. Thank you, Madam Chairman.

Mrs. BOUQUARD. Without objection they will be included in the record.

Mr. Voigt, is it correct that the capacity charge in general is about 25 percent of the total charge for the power?

Mr. VOIGT. That is correct.

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Mrs. BOUQUARD. Is it also true that TVA can't sell your excess power because it has its own excess power which it can't find a market for?

Mr. VOIGT. That is our understanding.

Mrs. BOUQUARD. Is that because they sell only to utilities that surround its territories?

Mr. VOIGT. That is correct. It is also my understanding that the neighboring utilities around TVA also have excess capacity on their own system, so, it is a domino effect.

Mrs. BOUQUARD. I think that answers my next question. If I had a lease for an apartment and my landlord said I had to honor this by paying rent on it until my lease expired, then I would try to sublease it.

Is it possible DOE could independently find a willing buyer for the electricity on the grid system, and in this way these limitations on TVA would not apply?

Mr. VOIGT. We have been attempting to work with TVA in trying to find other customers for this energy. However, so far as DOE being able to sell the power, we are precluded from doing so under section 44 of the Atomic Energy Act which says, in effect, that we can only sell power incidental to our normal production activities. This does not fall within that category.

Mrs. BOUQUARD. If this restriction was removed, would this help resolve this cost?

Mr. VOIGT. It could possibly help resolve it, yes.

Mrs. BOUQUARD. Isn't it also true that this power we are talking about is generated by coal plants that were built for this purpose?

Mr. VOIGT. I do not think this is necessarily true, Madam Chairman. Basically the TVA system is, as I am sure Mr. Parris will elaborate, principally comprised of nuclear, coal, and hydro. Just to what extent the power coming to our system is from coal plants, I am not sure. But it could be a mixture of all three of them.

Mrs. BOUQUARD. Has DOE looked into the possibility of selling this power to a utility to offset higher cost electricity from oil and gas in any way?

Mr. VOIGT. Not directly, Madam Chairman, although I know for a fact that TVA has looked into the possibility of being able to wheel this power into the southeast part of Florida to displace oil But, as I recall, the problem associated with that is principally one transmission capability.

Mrs. BOUQUARD. Does this relate to section 44?

Mr. VOIGT. No. In other words, it was, in effect, passing onto TVA the fact that the southeast Florida system could use power to offset oil which is now in the system, and asking them to look into it.

Mrs. BOUQUARD. Has there been any master plan or regional plan brought into this scheme to see what perhaps might be done?

Mr. VOIGT. A regional plan only within the framework that we have looked at the possibility of having TVA distribute this excess capacity in many areas of the country. We were looking up to the Northeast, up around the GPU system. We were looking up to the area surrounding Mount Commonwealth. We have asked the Southeast Power Administration to look into the possibility of

wheeling it out to other areas, but all efforts have been for naught. We have not found a way of doing that.

Mrs. BOUQUARD. Could it be perhaps sold at a discount, and thereby made more profitable? For instance, if you are paying the 25-percent capacity charge, could that fall in the realm of possibility?

Mr. VOIGT. I think, Madam Chairman, again that ties back to section 44 of the act and our authority. So, we have not really looked into that as a feasible means.

Mrs. BOUQUARD. Thank you very much, Mr. Voigt.

Mr. Lujan.

Mr. LUJAN. Thank you, Madam Chairman. Let me yield to my friend and colleague from Pennsylvania who has had some specific concerns on this matter.

Mrs. BOUQUARD. Mr. Walker.

Mr. WALKER. I thank the gentleman from New Mexico and thank you, Madam Chairman.

Madam Chairman, I first want to thank you for allowing me to sit in today on this session. As I say, I thank my colleague from New Mexico for yielding to me here for just a moment. I asked to be here today because there is a possibility some of the excess electrical power being talked about in the TVA system might have a bearing on some things at Three Mile Island. That is what I wanted to discuss, and I was interested in your comments of just a moment ago.

It seems there is excess power available. One logical way of dealing with it might be to look at the Three Mile Island situation.

Last week I explored, with some officials from the General Public Utilities (the owners of Three Mile Island), the possibility that the excess could be wheeled up to GPU. They seemed somewhat enthusiastic about the idea. As they explained to me, since the accident at TMI they have been acting without either the crippled TMI-2 reactor or TMI-1. That has been shut down, of course, indefinitely now because of problems in that plant.

With both reactors off line, GPU has been forced to purchase energy to make up their shortfall. The costs have been quite high. There have been a number of steps taken to aid the cleanup of Three Mile Island. The Federal Government has been quite active in those efforts. It is obvious Federal presence at TMI will continue far into the future. While there has been some resistance to having the Government assume cost of cleanup activities, understandably so, it would seem we might be able to work out something to ease the financial burden on GPU and the ratepayers of Pennsylvania, at the same time making it possible for the DOE Enrichment Division to receive the best possible price on the energy they require.

My suggestion is that DOE could purchase all the power called for in their contract to TVA and wheel the excess through to GPU. They would be able to use all the energy they need at the minimum price in the contract. GPU would get power at a lesser cost than they are being forced to pay and TVA would know they have customers for the electricity they are producing.

Anything that makes that much sense would have trouble here in Washington, but, Madam Chairman, what I would ask is that DOE look at the potential of it and come back and give us some

idea where the problems and what the potentials are for that kind of procedure.

If Mr. Voigt would have any comments, I would be very pleased to hear what the problem was that you ran into initially.

Mr. VOIGT. As I recall, Congressman Walker, one of the problems we ran into, I think there were two problems. One is the transmission capability, and second is the cost of power to the GPU system from the TVA system.

You might want to refer that part of the question to TVA when they testify.

Mr. WALKER. Thank you, Madam Chairman.

Mrs. BOUQUARD. Thank you very much, Mr. Walker.

Mr. Lujan.

Mr. LUJAN. Thank you, Madam Chairman.

We find ourselves in kind of a tough position. We have bought something, now we can't use it. That is the bottom line, I guess. We can't stockpile it either.

Mr. VOIGT. We looked into the aspects of preproduction, and hence, stockpiling it. Our economic analysis indicates that is the wrong way to go.

Mr. LUJAN. Well, uranium is pretty cheap now. Maybe now is the time to do it. Besides, the mines are all closed down. It would be nice to have them opened again.

Mr. VOIGT. The factor involved here, Congressman Lujan, is the fact that when we do put it in preproduction stockpile, then this becomes a carrying cost to all the customers. When we look at the carrying costs upon that preproduction inventory——

Mr. LUJAN. You mean like interest?

Mr. VOIGT. Yes, we do charge for separative work an imputed interest on a SWU inventory.

Mr. LUJAN. If it were a quasi-Government corporation like the one we have been talking about, would they do it as opposed to DOE now doing it as a Government agency?

Mr. VOIGT. It still represents a cost which has to be recovered in one manner or another. So, from that standpoint, even within a private business, an inventory cost is an item which is included within the cost of the product.

Mr. LUJAN. You are saying that would cost an additional $216 million in 1982? We are going to have to pay that anyway, is that correct?

Mr. VOIGT. No, sir, to get out of our demand charges of $151 million in the 1983 budget would require additional power purchases of $396 million above and beyond the $904 million we have in our——

Mr. LUJAN. Do that again. I didn't quite understand what you were saying.

Mr. VOIGT. Within the $904 million we have in our power budget for fiscal year 1983 is $151 million of demand charges. I am saying to get out of that $151 million of demand charges, I would have to purchase additional power of $396 million.

Mr. LUJAN. You mean the demand charge of $151 million is a charge that we face if we didn't buy it, but kind of like a standby charge. But if we did buy it, it would be some $300 million?

Mr. VOIGT. In addition.

Mr. BREWER. Could I try, Mr. Lujan?

Mr. LUJAN. Sure.

Mr. BREWER. You pay $151 million in any case, whether you take the power or not. It is, in a sense, the capital amortization of the powerplant. To actually take receipt of the power, you have to pay for the fuel and so forth, which is another $394 million, for a total of $545 million.

So, it is a tradeoff between $151 versus $545 million.

Mr. LUJAN. What are they doing with that power now? Are they just not generating it, or is the plant closed down, or what?

Mr. VOIGT. This becomes excess power to the overall——

Mr. LUJAN. What are they doing with it? Are they selling it to somebody else?

Mr. VOIGT. I think they are attempting to sell it to somebody else, Mr. Lujan, but I think that could be more fruitfully——

Mr. LUJAN. What happens if we are not using it? Does it dissipate? What happens to it? It does not stay within the lines?

Mr. VOIGT. They are just not generating it.

Mr. BREWER. It is not being generated.

Mr. LUJAN. So, we couldn't save anything by just shutting down a powerplant or two?

Mr. BREWER. That in fact is the mechanism. But the fact that you have the powerplants shut down does not mean that you are not accruing depreciation and interest costs on the powerplants.

Mr. LUJAN. Yes. How about this business of selling it to others? Supposing DOE went ahead and bought it. You are prohibited by contract from selling it to anyone else, aren't you?

Mr. VOIGT. We are prohibited by the Atomic Energy Act from selling it ourselves.

Mr. LUJAN. There is really no chance of selling it anywhere, demand is that low. We can't just sell to GPU, for example, or maybe one of our other power marketing agencies like Bonneville, what about all utilities that are building new powerplants? I know in New Mexico we are building a huge coal-fired powerplant. Now nobody wants it. Everybody wants to get out of their share.

Aren't there shortages somewhere in the country?

Mr. VOIGT. Yes, sir, indeed. For example, as I understand it, TVA was attempting to sell some excess power from this system to Houston Lighting & Power. However, as I understand it, they ran into, again, some difficulties in being able to wheel that power from their generating stations to Texas.

Mr. LUJAN. The loss going down the lines?

Mr. VOIGT. No, I do not think it was the loss. Again, I think that TVA is in a better position to answer that question than I am.

Mr. LUJAN. All right, I guess. Thank you.

Mrs. BOUQUARD. Thank you very much, Mr. Lujan.

Mr. Voigt, what is the purpose of section 44's restriction that you referred to in the Atomic Energy Act? What was the policy behind it?

Mr. VOIGT. I am afraid that policy predates me, Madam Chairman. But as I understand it, it was to insure that the Government was not put into the business of either trying to compete with private and/or public power generation capability. Hence, that was

the major thought that went behind it. But I can supply it for the record, if that will suffice.

Mrs. BOUQUARD. If you would, please.

[The information follows:]

PURPOSE OF SECTION 44 OF THE ATOMIC ENERGY ACT OF 1954

We have examined in detail the legislative history underlying Section 44 of the Atomic Energy Act and have concluded that it would not prevent DOE from directly selling its excess contract electricity because DOE did not generate that power. The purpose underlying Section 44 was to permit DOE's predecessor (the Atomic Energy Commission) to dispose of energy it produces in the course of its own operation, but to preclude it from entering the power-producing business in competition with private and/or public power generators without further Congressional authorization to construct or operate such commercial facilities. The restriction on the commercial sale of power by DOE (of power not produced incident to the operation of research and development or production facilities) which appears in the last sentence of Section 44 applies only to power which is both produced and sold by DOE.

Mrs. BOUQUARD. Dr. Brewer, do you have further comments?

Mr. BREWER. No, Madam Chairman.

Mr. LUJAN. If there are no additional comments, I want to add that that policy was arrived at in the old AEC days, when, we never foresaw a situation like this. It was always more and more power that we were going to need. Maybe that needs to be changed. Maybe we ought to look at that.

Mr. BREWER. Yes, sir.

Mr. LUJAN. Thank you.

Mrs. BOUQUARD. I think this is something the subcommittee might perhaps like to take a look at later on. Thank you very much, Dr. Brewer and Mr. Voigt, for your very fine testimony today.

Mr. VOIGT. Thank you.

Mr. BREWER. Thank you, Madam Chairman.

Mrs. BOUQUARD. Our next witnesses are Mr. Hugh Parris, Manager of Power at the TVA; and Mr. Herbert Sanger, Jr., General Counsel of the TVA. And I welcome our fellow Tennesseeans to our subcommittee this afternoon.

STATEMENTS OF HUGH G. PARRIS, MANAGER OF POWER, TENNESSEE VALLEY AUTHORITY, AND HERBERT S. SANGER, JR., GENERAL COUNSEL, TENNESSEE VALLEY AUTHORITY

Mr. SANGER. Good afternoon, Madam Chairman.

Mrs. BOUQUARD. We have your written testimony before us. Without objection, you can summarize or read your testimony, as you wish. You may proceed, gentlemen.

Mr. PARRIS. Thank you, Madam Chairman.

We would like to summarize the statements we have presented.

Mrs. BOUQUARD. Without objection, you may summarize and your entire testimony will be made a part of the record.

Mr. PARRIS. Thank you.

We are glad to have this opportunity to provide information about the long-term contractual arrangements under which TVA makes available electric power to customers having large loads. The operational and economic bases for these arrangements are closely related to the legal bases for them. Herbert S. Sanger, Jr.,

TVA's General Counsel, is here with me and will be glad to discuss the legal aspects of these arrangements.

TVA, consistent with its statutory responsibilities, supplies power at wholesale to 160 municipal and cooperative distributors in Tennessee and parts of 6 other States for resale to domestic, commercial, and industrial customers.

In addition, TVA provides power directly to a number of large industries having very large or unusual loads, as well as several Federal agencies, including the DOE atomic energy facilities at Oak Ridge and Paducah.

Most commodities can be stored until sold, and the plants producing them can continue production up to their maximum capacity without interruption. However, an electric power supplier must be able to meet demands of its customers instantaneously.

Accordingly, power suppliers, including TVA, plan and construct facilities to have available at all times the generating and transmission capacity required to meet the forecasted demands of all their customers.

It now requires on an average 10 to 12 years to construct and place in commercial operation large steam-generating units. TVA thus must plan years ahead and match system capacity with loads and must continuously have under construction the capacity to meet projected growth in both existing and new loads.

These generating and other facilities require tremendous investments of money; the investment per revenue dollar is much larger in the electric industry than in most others.

In directly serving customers with large loads, TVA enters into "availability contracts." Under an availability contract, TVA agrees to make power available continuously for the term of the contract at a specified delivery point. While the customer can use this available power to whatever extent it wishes, TVA must at all times, except for force majeure, make available firm power in the amount specified in the contract.

Consistent with the provisions of the TVA Act, TVA establishes the rates for the electric power it supplies for the region. The setting of these rates requires complicated decisions involving statutory requirements, bond covenant requirements, costs, and various other factors, including judgment.

At the same time, the TVA Act provides for power rates to be as low as feasible. As is generally true throughout the electric utility industry, rates which have been established for serving large loads in the TVA region include: (1), a demand for capacity charge, (2), an energy charge, and (3), certain minimum payments or minimum bill obligations extending for the term of the contracts.

The minimum payment obligation is a customary and important part of the rate structure because a large part of the cost of serving a customer is independent of how much power the customer uses and depends instead on how much power the customer has asked the supplier to have available for the customer.

TVA has long sought, in designing its rates, to reflect costs of service. The minimum payment obligations under TVA's industrial rates are an integral part of that effort.

If a large customer was to discontinue taking power or cut its actual use far below the amount TVA is required to make available

under the contract, TVA, unless protected by minimum payment obligations, would suffer a substantial loss since the capacity provided to make the power available would not be used for the purpose intended.

The extent of that loss would be difficult or impossible to determine precisely at the time of entering into a contract because TVA cannot know if or when such curtailment or termination of use may occur; what the amount of any curtailment may be; what the economic conditions may be at the time or thereafter; what the situation may be with respect to other customers' loads at the time or thereafter; and whether new customers may be able to absorb loads at the end of the existing contract term.

Therefore, in establishing rate schedules, including minimum payment requirements for the availability of power, the electric system must take into account the average conditions which can be expected for customers such as the large industrial customers. If the large industrial customers were to avoid minimum payment obligations, the resulting shortfall in revenues needed to cover fixed costs could only be made up by increasing rates generally applicable to ratepayers.

For large loads, the appropriate level of minimum payment obligations is measured by a reasonable appraisal of the average impact of all the highly varied conditions, favorable and unfavorable, that could occur over the years in serving customers with such loads.

In light of such uncertainties, TVA, in initially entering into a contract with a customer having a large load, will only do so on the basis of a contract extending at least 10 years. This assures that TVA, through the minimum payment obligations for the term of the contract, will be able to recover at least a portion of the fixed costs incurred in providing facilities necessary to provide the amount of power requested by the customer.

TVA's fixed costs, of course, continue for the life of its equipment and facilities (about 35 years), which is much longer than the term of its power contracts. TVA thus bears the risk of having to carry those fixed costs if other system loads do not increase sufficiently to pick up loads of customers which do not renew their contracts or which do renew them for substantially reduced amounts of power.

To further assure that costs incurred in constructing and maintaining facilities to serve a large load at a particular location are not unfairly shifted to other ratepayers, the power contracts provide that the electric power under the contract is made available for use at that particular location. The contracts do not permit transfer or resale of the power by the customer for use at some other location.

If an existing customer, because of changed circumstances, were to transfer power to a different facility or customer, this would be replacing sales that TVA, in carrying out its power supply responsibilities, was prepared to make available as a result of its planning and substantial investment in facilities. Consumers throughout the area would then have to absorb the fixed cost of those unused facilities through higher electric rates.

Moreover, to the extent that TVA might at times be able to find a market for any power that an industrial customer may not then

be using under its contract, this will provide some additional funds to help cover fixed costs—particularly those continuing after the expiration of power contracts—incurred in providing the facilities to serve the industrial customer.

Large load customers, including DOE's predecessor (AEC) when contracting for power for the Oak Ridge and Paducah facilities, have understood when entering into their power contracts that the power made available under the contract could not be resold and that in the event of reduction in use at the customer's facilities there would be continuing minimum payment obligations for the term of the contract even though TVA, prior to the expiration of the contract, might find a market for any of the power not being used.

The conditions now existing as a result of the current, as well as projected, operational cutbacks, including substantial reductions in the amounts of power being used, at DOE's atomic energy facilities are a very real-life demonstration of the absolute necessity for minimum payment obligations continuing for the contract term.

TVA has expended exceedingly large sums to provide system facilities adequate to supply the amounts of power requested by AEC, and set out in the Oak Ridge and Paducah contracts. Under those contracts, a total of 3,165 megawatts is now available in increasing steps for use at DOE's Oak Ridge and Paducah facilities, and under amendments requested by AEC and entered into in 1973 and 1974 the amount of power to be made available increases in steps in 1983 and 1984 to a level of 4,485 megawatts.

To help put this in proper perspective TVA, in order to make this amount of power available—including necessary capacity reserves—must have the equivalent of five large nuclear units. Projected costs for such units range from $1 to $3 billion.

Obviously, the fixed costs TVA has incurred in providing facilities to make available the amounts of power requested for these facilities will continue even though DOE may use less power as a result of operational cutbacks. Without the minimum payments by DOE, these fixed costs incurred in providing capacity to serve DOE's facilities would have to be recovered from other consumers through higher rates.

Moreover, if DOE were to be relieved of its payment obligations, there are many other customers with large loads who would expect and demand that they too be relieved of minimum payment obligations they are now making. As a result of poor economic conditions, numerous other customers with large loads are operating at substantially reduced levels in the TVA region.

The risk of being unable to recover, through additional sales of power, fixed facility costs continuing after the expiration of a contract that is not renewed has been magnified further by the fact that growth in electric power loads are not now projected to increase by more than 2½ percent per year. This is quite a contrast to the annual 6- to 8-percent load growths that were being projected at the time TVA entered into the contracts to supply power for the Paducah and Oak Ridge operations.

I appreciate the opportunity to explain the economic necessity for the contractual arrangements under which customers with

large loads receive service from TVA. Mr. Sanger will now comment on the legal aspects of such agreements.

[The prepared statement of Hugh Parris follows:]

STATEMENT OF

HUGH G. PARRIS, MANAGER OF OFFICE OF POWER,

TENNESSEE VALLEY AUTHORITY

BEFORE THE

SUBCOMMITTEE ON ENERGY RESEARCH AND PRODUCTION OF THE

COMMITTEE ON SCIENCE AND TECHNOLOGY

UNITED STATES HOUSE OF REPRESENTATIVES

MARCH 8, 1982

We are glad to have this opportunity to provide information about the long-term contractual arrangements under which TVA makes available electric power to customers having large loads. The operational and economic bases for these arrangements are closely related to the legal bases for them. Herbert S. Sanger, Jr., TVA's General Counsel, is here with me and will be glad to discuss the legal aspects of these arrangements.

TVA, consistent with its statutory responsibilities, supplies power at wholesale to 160 municipal and cooperative distributors in Tennessee and parts of six other states for resale to domestic, commercial, and industrial customers. In addition, TVA provides power directly for a number of large industries having very large or unusual loads, as well as several Federal agencies, including the DOE atomic energy facilities at Oak Ridge and Paducah.

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As a supplier of power, TVA's objective is the advancement of the national defense and the physical, social, and economic development of the area in which it conducts its operations by providing that area with an ample supply of electric power at the lowest feasible cost. Thus, TVA considers its electric power system to be for the benefit of the entire area it supplies. Individual customers are not served from individual generating plants. Instead, all of TVA's power goes into what is in effect a common pool, and all of TVA's customers are supplied from that pool.

Most commodities can be stored until sold, and the plants producing them can continue production up to their maximum capacity without interruption. However, this condition does not exist in the case of electricity. Electricity is unique in that it cannot be stored for later use and it must be produced as used. Also, any customer can use electricity whenever it wishes by actions as simple as flipping a switch. The power supplier must be able to meet the demand of its customers instantaneously. Accordingly, power suppliers, including TVA, plan and construct facilities to have available at all times the generating and transmission capacity required to meet the forecasted demands of all their customers. This capacity includes the necessary margin

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to take care of equipment outages and special circumstances which may arise.

It now requires on an average 10 to 12 years to construct and place in commercial operation large steam generating units. TVA thus must plan years ahead to match system capacity with loads and must continuously have under construction the capacity to meet projected growth in both existing and new loads. These generating and other facilities require tremendous investments of money; the investment per revenue dollar is much larger in the electric industry than in most others. Most of this investment is, of course, made long before the generating plant and related facilities are available for use, and the fixed costs on them continue and must be paid throughout their life (approximately 35 years) whether or not those who contract for electricity ever use the amounts for which they contracted.

In directly serving customers with large loads, TVA enters into "availability contracts." Under an availability contract, TVA agrees to make available continuously for the term of the contract the specified voltage and frequency at a specified delivery point, such as a substation. The maintenance of such voltage and frequency constitutes availability of the power and

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energy for which the customer agrees to pay. The amount of power which the customer requests and TVA is responsible for providing under the contract is generally expressed in kilowatts and is the customer's "contract demand" under the contract. While the customer can use this available power to whatever extent it wishes, TVA must at all times, except for force majeure, make available firm power in the amount specified in the contract.

Consistent with the provisions of the TVA Act, TVA establishes the rates for the electric power it supplies for the region. The setting of these rates requires complicated decisions involving statutory requirements, bond covenant requirements, costs, and various other factors, including judgment. Among these are the requirements that TVA

(1) Finance its power system from power revenues and from the proceeds of its bonds which are backed only by TVA's power revenues.

(2) Pay $20 million per year to the United States Treasury until $1 billion of the appropriations which were invested in the TVA power system as of 1959 (when

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the TVA revenue bond amendment was enacted) has been paid.

(3) Pay the annual interest cost on all borrowings, plus an annual return to the Treasury on the appropriation investment still outstanding computed on the basis of the Treasury's average cost of its borrowed money.

(4) Make in-lieu-of-tax payments to State and local governments as provided under the TVA Act.

(5) Charge rates for power which will:

(a) Produce gross revenues sufficient to cover the costs of operating, maintaining, and administering the power system and all other payments mentioned above;

(b) Provide "such additional margin as the Board may consider desirable"; and

(c) Meet the tests set out in sections 3.2, 3.3, and 3.4 of TVA's Basic Bond Resolution, which constitutes a contract between TVA and its bondholders.

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At the same time, the TVA Act requires power rates to be as low as feasible.

As is generally true throughout the electric utility industry, rates which have been established for serving large loads in the TVA region include (1) a component related to TVA's fixed costs (such as interest and depreciation) on the equipment and facilities required to make power available (this is generally referred to as a demand or capacity charge), (2) a component generally related to those costs (such as fuel) which vary with the amount of energy generated (this is usually referred to as the energy charge), and (3) certain minimum payment, or minimum bill obligations extending for the term of the contracts.

The minimum payment obligation is a customary and important part of the rate structure because a large part of the cost of serving a customer is independent of how much power the customer uses and depends instead on how much power the customer has asked the supplier to have available for the customer. TVA has long sought, in designing its rates, to reflect costs of service. The minimum payment obligations under TVA's industrial rates are an integral part of that effort, taking into account

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as it does the capacity needed to serve large industrial loads and the fixed costs--interest, depreciation, operation, maintenance, and administration associated therewith.

If a large customer were to discontinue taking power or cut its actual use far below the amount TVA is required to make available under the contract, TVA, unless protected by minimum payment obligations, would suffer a substantial loss since the capacity provided to make the power available would not be used for the purpose intended. The extent of that loss would be difficult or impossible to determine precisely at the time of entering into a contract because TVA cannot know if or when such curtailment or termination of use may occur; what the amount of any curtailment may be; what the economic conditions may be at the time or thereafter; what the situation may be with respect to other customers' loads at the time or thereafter; and whether new customers may be able to absorb loads at the end of the existing contract term.

Therefore, in establishing rate schedules, including minimum payment requirements for the availability of power, the electric system must take into account the

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average conditions which can be expected for customers such as the large industrial customers. If the large industrial customers were to avoid minimum payment obligations, the resulting shortfall in revenues needed to cover fixed costs could only be made up by increasing rates generally applicable to ratepayers. For large loads, the appropriate level of minimum payment obligations is measured by a reasonable appraisal of the average impact of all the highly varied conditions, favorable and unfavorable, that could occur over the years in serving customers with such loads.

In light of such uncertainties, TVA in initially entering into a contract with a customer having a large load will only do so on the basis of a contract extending at least 10 years. This assures that TVA, through the minimum payment obligations for the term of the contract, will be able to recover at least a portion of the fixed costs incurred in providing facilities necessary to provide the amount of power requested by the customer. TVA's fixed costs, of course, continue for the life of its equipment and facilities (about 35 years), which is much longer than the term of its power contracts. TVA thus bears the risk of having to carry those fixed costs if other system loads do not increase sufficiently to pick up loads of

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customers which do not renew their contracts or which do renew them for substantially reduced amounts of power.

To further assure that costs incurred in constructing and maintaining facilities to serve a large load at a particular location are not unfairly shifted to other ratepayers, the power contracts provide that the electric power under the contract is made available for use at that particular location. The contracts do not permit transfer or resale of the power by the customer for use at some other location. If an existing customer, because of changed circumstances, were to transfer power to a different facility or customer, this would be replacing sales that TVA, in carrying out its power supply responsibilities, was prepared to make available as a result of its planning and substantial investment in facilities. Consumers throughout the area would then have to absorb the fixed cost of those unused facilities through higher electric rates.

Moreover, to the extent that TVA might at times be able to find a market for any power that an industrial customer may not then be using under its contract, this will provide some additional funds to help cover fixed costs (particularly those continuing after the expiration

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of power contracts) incurred in providing the facilities to serve the industrial customer. Large load customers, including DOE's predecessor (AEC) when contracting for power for the Oak Ridge and Paducah facilities, have understood when entering into their power contracts that the power made available under the contract could not be resold and that in the event of reduction in use at the customer's facilities there would be continuing minimum payment obligations for the term of the contract even though TVA, prior to the expiration of the contract, might find a market for any of the power not being used.

The conditions now existing as a result of the current, as well as projected, operational cutbacks, including substantial reductions in the amounts of power being used, at DOE's atomic energy facilities are a very real life demonstration of the absolute necessity for minimum payment obligations continuing for the contract term. TVA has expended exceedingly large sums to provide system facilities adequate to supply the amounts of power requested by AEC, and set out in the Oak Ridge and Paducah contracts. Under those contracts, a total of 3,165 MW is now available for use at DOE's Oak Ridge and Paducah facilities, and under amendments requested by AEC and entered into in 1973 and 1974 the amount of power to

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be made available increases in steps in 1983 and 1984 to a level of 4,485 MW.

To help put this in proper perspective TVA, in order to make this amount of power available (including necessary capacity reserves), must have the equivalent of 5 large nuclear units. Projected costs for such units range from $1 to $3 billion. Obviously, the fixed costs TVA has incurred in providing facilities to make available the amounts of power requested for these facilities will continue even though DOE may use less power as a result of operational cutbacks. Without the minimum payments by DOE, these fixed costs incurred in providing capacity to serve DOE's facilities would have to be recovered from other consumers through higher rates.

Moreover, if DOE were to be relieved of its payment obligations, there are many other customers with large loads who would expect and demand that they too be relieved of minimum payment obligations they are now making. As a result of poor economic conditions, numerous other customers with large loads are operating at substantially reduced levels in the TVA region. Again, if this were to occur, it could only result in further improper shifting of costs to other consumers through higher rates.

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TVA's risk of not being able to fully recover the fixed costs of providing facilities increases significantly for large customer loads. And the larger the load, the greater is that risk, because there is less likelihood of a market being available to absorb such amounts of power when a directly served customer does not renew its power contract. Again, this is particularly significant with respect to DOE which will have a total contract demand of almost 4-1/2 million kilowatts or more than 10 times the second largest contract demand which is for a Reynolds Metals Company facility. The DOE contract demand is more than 17 times the contract demand of any other industrial customer of TVA other than Reynolds.

The risk of being unable to recover through additional sales of power fixed facility costs continuing after the expiration of a contract that is not renewed, has been magnified further by the fact that growth in electric power loads are not now projected to increase by more than 2½ percent per year. This is quite a contrast to the annual 6-8 percent load growths that were being projected at the time TVA entered into the contracts to supply power for the Paducah and Oak Ridge operations.

I appreciate the opportunity to explain the economic necessity for the contractual arrangements under which customers with large loads receive service from TVA. Mr. Sanger will now comment on the legal aspects of such agreements.

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Mrs. BOUQUARD. Thank you very much, Mr. Parris.

Mr. Sanger, will you proceed with your testimony.

Mr. SANGER. Thank you, I will summarize briefly my statement.

Mrs. BOUQUARD. You may summarize your statement, and without objection your written testimony will be made a part of the record.

Proceed as you wish.

Mr. SANGER. Thank you.

The need for minimum payment obligations under power supply arrangements as discussed by Mr. Parris has been recognized by the courts. The courts have consistently held that the question of the effect of minimum bill component of rates is a legal question. Minimum bill provisions have been upheld and applied in accordance ;with their terms in every court case of which we are aware that has involved the question.

These court opinions have involved decisions in various courts of this country throughout this century. The decisions include two Federal court cases involving TVA contractual arrangements. These two cases are styled *Mobil Oil Corp.* v. *Tennessee Valley Authority,* and the *Carborundum Co.* v. *Tennessee Valley Authority.*

The citations for these cases are included in my statement. The basic statement of the law that can be distilled from these many cases is this: A valid contract may be entered into between a power supplier and a customer requiring the payment of a minimum charge. Under such a contract the customer is bound to pay such minimum charge, though the customer consumes no current at all. The provision requiring the payment of the minimum charge is a part of the direct obligation of the contract.

This particular statement of law was examined by the court as it made a detailed analysis of prior precedents in a ruling in favor of TVA in the *Mobil Oil Co.* case to which I referred. The court there said that a minimum payment is a rate for electric service. In so doing it pointed out that TVA has always included such rates in its contract. It noted a historical examination of this issue. And the historical point to which the court referred was that in 1938, a joint congressional committee was created by statute to investigate various phases of TVA's activities, including its power rates. The committee employed its own staff to make an analysis of TVA's power program.

The engineering report, which was printed as an appendix to the committee's report, discussed among other matters a number of contracts TVA had entered into for the sales of power to industries. And in so doing it stated:

> There may be some reason for criticizing the Tennessee Valley Authority because of the fact that a very high percentage of the power which it has contracted to sell to industries has been made available to chemical and electrometallurgical groups. While it is not probable, perhaps it is at least conceivable that both these industries might be affected by adverse business conditions at the same time, in which event a cessation of their operations would bring about a sudden, simultaneous and rather drastic falling off of the TVA load.

The committee pointed out, however, that TVA has secured some measure of protection of its revenues against the possibility of such reduction in sales by reason of the fact that certain minimum bills

are included in the contracts and become operative in such circumstances.

The court's remarks in the *Mobil* case, which included that historical reference, are so comprehensive and well stated that I have referred to them extensively in my statement.

The court in that case also dealt with the type of issue that is being considered by this committee today. It pointed out the economic basis and fairness of a minimum payment obligation under the availability types of power contracts.

Indeed, the court pointed out that it had been considered with reference to TVA's contracts with DOE and its predecessors. At the time of the earlier contract with DOE's predecessor there was a discussion in the committee that then had jurisdiction over AEC matters which contemplated this very type of occurrence.

I think Representative Yates was engaged in a colloquy with Mr. Cooke of AEC. And it was recognized by the committee that even though DOE might not have a need for the total amount of power for which it contracted, that the nature of the contract was an availability contract, and that DOE had contracted to pay for the availability, as well as for the actual taking of the energy. That discussion also included the proposition and the recognition that DOE's obligation, while it may seem severe, was only covering a part of TVA's risk.

TVA has made the expenditure for plants that take about 35 to 40 years to amortize the cost. DOE's obligation is only to pay the fixed cost for the term of the contract. Accordingly, TVA still bears the risk of some 30 years of fixed costs. That is part of the reason for the prohibition in the power contract, and I think some of the history of the statute about which the Chairman asked prohibiting the sale of this power by DOE.

The contract, as well as the statute, prohibits it. Thank you very much. I will be glad to answer any other questions.

[The prepared statement of Herbert Sanger follows:]

STATEMENT OF

HERBERT S. SANGER, JR., GENERAL COUNSEL,

TENNESSEE VALLEY AUTHORITY

BEFORE THE

SUBCOMMITTEE ON ENERGY RESEARCH AND PRODUCTION OF THE

COMMITTEE ON SCIENCE AND TECHNOLOGY

UNITED STATES HOUSE OF REPRESENTATIVES

MARCH 8, 1982

The need for minimum payment obligations under power supply arrangements as discussed by Mr. Parris has been expressly recognized by the courts as such provisions have consistently been held to be enforceable in accordance with the contractual terms. These court opinions have involved TVA contractual arrangements as well as those of other power suppliers.

This was examined by the court as it made a detailed analysis of prior precedents and authorities in ruling in favor of TVA in Mobil Oil Corp. v. Tennessee Valley Authority, 387 F. Supp. 498 (N.D. Ala. 1974). The plaintiff in that case, a directly served customer of TVA, questioned the legality of TVA's contract provisions calling for fixed contract demands and minimum payment obligations for the full 10-year contract term. Mobil had shut down its plant with about three years left on its contract

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term, thus becoming obligated for certain minimum payments each month. The court, in its decision recognized the practical necessity for, and the common use of, such provisions. The court's remarks are so comprehensive and well stated that I would like to repeat part of its comments in discussing the purpose of minimum bills being applicable for specified periods.

> The demand upon a supplier of electric power fluctuates significantly from hour to hour, day to day, and season to season. Electricity is unique in that it cannot be stored to meet the demand for it, but must be available for use instantaneously at the flick of a switch or the push of a button. Accordingly, TVA, like other power suppliers, must provide generating and transmission capacity to meet the total forecasted maximum demands of its customers (including margins in case of outages). This requires very large capital outlays.

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The "lead time" required for the construction of new generating facilities had been increasing in recent years, and now ranges from 6 to 10 years. The heavy investment in such facilities must accordingly be committed long before the facilities are available for use; and the fixed costs associated with such investment (depreciation, interest, maintenance, etc.) continue and must be met whether or not the facilities actually generate electric energy.

Because of this situation, rates chargeable by electric power suppliers to customers with large contract demands, such as Mobil's, commonly provide for minimum bill payments over specified terms of years regardless of the extent to which they actually use the power which the supplier has contracted to make available for them. As stated by the Court of Appeals for the Sixth

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Circuit in City of Memphis, Tenn. v. Ford Motor Co., 304 F.2d 845 (6th Cir. 1962), when lead times were considerably shorter than they are today:

> [T]he district court found that the custom and practice of electric facilities in the Tennessee Valley area, and throughout the country, is to require large industrial customers, such as Ford, to execute contracts providing for minimum bill requirements, and for terms of five years or more. . . .
>
> It appears that, in the electric power industry, plans must be made for the determination of power needs from three to five years in advance in order to take care of future loads because of the extended period

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> required for the planning and construction of large generating units, and this extended period is referred to in the industry as "lead time." It is normally impossible to adjust construction programs to take account of the loss of major loads occurring within such lead time; and this is the economic basis for the industry's requirement of contracts for fixed periods with minimum payment obligations during the entire term of the contract [at 503-504].

In explaining that the minimum payment obligations are an integral part of TVA's rates applicable over the entire term of the contract, the court said:

> A minimum bill is in fact a rate for electric service. Avant Gas Serv. Co. v. Corporation Comm'n, 184 Okl. 583, 89 P.2d 291, 292 (1939); Great Northern R. Co. v. Armour & Co., 26 F.Supp. 964, 967 (N.D. Ill.1939).

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See State v. Sloan, 139 La. 881, 72 So. 428 (1916); Donnell v. Brockman, 117 Ark. 132, 173 S.W. 843 (1915). Minimum bill provisions are an integral portion of TVA's rates and have been from the inception of TVA's power program. . . .

* * *

The contract is an agreement under which Mobil simply promises to pay the applicable rates, including minimum bills, for the full contract term. The attempted separation of the minimum bill as a rate from the contract to pay it seems to the Court fallacious. The purpose of the minimum bill is to assure the power supplier of revenue to help meet its fixed costs on capacity made available to supply the customer's contract demand during the term of the contract. A minimum bill which the customer was not obligated to pay

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throughout the contract term, but only until he might decide to terminate or reduce his actual power use, obviously would not serve this purpose.

* * *

For the Court to convert the ten-year term of Mobil's contract to pay the minimum bill portion of the rates into a term of six years and ten months, as Mobil requests, would represent judicial review and modification of TVA's rates just as clearly as would a judicial change in the level of the rates. It would also be incompatible with section 10 of the TVA Act, which expressly authorizes TVA to enter into power contracts "for a term not exceeding twenty years." Mobil's contention would also require the Court itself to fix new rates applicable to Mobil's actual use of power during the

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> remaining three years and two months of the contract term (Complaint, prayer 3), even though TVA has already fixed the applicable rate in the amount of the minimum bill [at 508, 509].

The court further pointed out that even if the contract were viewed separately from TVA's authority to set rates the result would be the same. It noted in this connection that under an availability contract such as that involved between TVA and its directly served customers, the supplier simply agrees to make power available and the customer agrees to pay for such availability in accordance with the contract price terms whether the customer actually uses the power or not.

The Mobil court noted that minimum bill provisions in power availability contracts have been uniformly upheld and enforced on this basis, and in this connection cited Gatineau Power Co. v. Fraser Companies, Ltd. [1941] 2 D.L.R. 487 (Can. 1940); Oliver-Mercer Elec. Coop., Inc. v. Fisher, 146 N.W.2d 346 (N.D. 1966); San Joaquin Light & Power Corp. v. Costaloupes, 274 P. 84 (Cal. 1929); Marin Water & Power Co. v. Town of Sausalito, 143 P. 767 (Cal. 1914); Beck v. Indianapolis Light

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& Power Co., 76 N.E. 312 (Ind. Ct. App. 1905); Gould v. Edison Elec. Illuminating Co., 60 N.Y.S. 559 (Sup. Ct. 1899); and 22 Am. Jur. 2d Damages §§ 212-213, at 297-99 (1965).

The Mobil court also referred to the well-known rule, citing United States v. San Francisco, 310 U.S. 16, 29-31 (1940), and Lyle Cushion Co. v. McKendrick, 204 F.2d 609, 612 (5th Cir. 1953), that a party who has accepted the benefits of a contract over a portion of the contract term cannot escape its burdens.

The Carborundum Company, seeking to avoid the same type of minimum payment obligations for the term of its TVA power contract, as had Mobil, filed suit a little over a year ago. In its opinion in favor of TVA, the court expressed its view that the issues in the case had been carefully and thoroughly reviewed and correctly decided in the Mobil case. The court further explained that the minimum payment obligation "is simply an integral portion of the rates which TVA has fixed, pursuant to express congressional authority, for electric service to industries, enforceable and collectible during the term of the contract." Carborundum Co. v. Tennessee Valley Authority, 521 F. Supp. 590, 594 (1981).

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The protection, which the courts have recognized as being needed by a power supplier when a customer discontinues or reduces its power takings, is discussed in Caywood, Electric Utility Rate Economics ch. 3, "The Tariff" (6th printing 1972):

> [Rate] Schedules for larger loads in particular carry term provisions which require that the customer sign a contract for a specified period during which he is committed to certain minimum payments. Such provision is, of course, protection for the utility against idle facilities [at 65].

In an earlier discussion of utility pricing (ch. 2, "The Price Structure"), Caywood lists a number of items influencing rate design, two of which he states as follows:

> 17. The larger the load and the lower the price, the more ratchet and term protection the utility needs against loss of load and resulting idle facilities.

* * *

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> 20. It is impossible to make prices high enough for short terms for the large load unless the load can be readily replaced [at 33].

As explained by Mr. Parris, even with minimum payment obligations for the term of the contract, TVA takes the risk that fixed charges may not be recoverable after the end of the contract term if the customer elects not to renew the contract and its load cannot be immediately replaced. The minimum payment portion of TVA's rates may thus work to TVA's advantage in some circumstances and to its disadvantage in others. The basic fairness of this approach was specifically considered and approved by Congress in 1953, when it amended the Atomic Energy Act (67 Stat. 182) to authorize AEC to enter into very large contracts (with TVA and two private utility groups) which provided for cancellation charges equivalent to minimum bills following any cessation or reduction by AEC of actual power use. The amendment was approved after it was made clear during congressional committee hearings that such payments by AEC to TVA might continue for four years and three months after cessation of power use, and entail payments to TVA during such period of as much as $130 million.

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The hearings included the following colloquy between Representative Yates and Mr. Cook of AEC:

> Mr. YATES. Let us go back to TVA for a moment. Suppose TVA can shift power over to other Government installations or non-Government users, will there be a diminution in your cancellation cost?
>
> * * *
>
> Mr. COOK. The cancellation charge with TVA is based upon their normal load growth, an estimate of how long it would take them to absorb any power that we canceled into their normal load growth of their system. It provides for a continuation of the demand charge during that period, so that they, in turn, can make a return to the Government as they are required by law to amortize their facilities.

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Mr. YATES. Then what you are saying is this. In the event that TVA can shift their power, you will still have to pay the charges to them. It is based upon their estimate--that is, their charges are presently based upon an estimate as to what their loss will be, but in the event that their loss is not so great, in the event that they are able to shift it over to other users, would you nevertheless have to pay those costs to TVA?

Mr. COOK. That is right. But in the event that it takes them longer than the estimate, based upon their normal load growth, we would not pay more" [Hearings on the Second Independent Offices Appropriations for 1954 Before a Subcomm. of the House Comm. on Appropriations, 83d Cong., 1st Sess., pt. 1, at 361 (1953)].

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In this regard, the necessity for providing protection for the electric power suppliers building capacity to serve AEC facilities was pointed out by the Joint Committee on Atomic Energy, in S. Rep. No. 477, 83d Cong., 1st Sess. (1953), which accompanied the proposed legislation referred to above. The report, in explaining why such contractual arrangements were necessary, pointed out that if the power was not used by the AEC:

> [T]he utilities would have to find other users for the power in the area. Since the gaseous diffusion plants, when in full operation, will consume as much energy in a year as New York City would consume in 3 years, or three-fourths as much energy as the iron and steel industry is estimated to need in 1955, or 70 percent of the requirements of the chemical industries, or about one-quarter of the energy used in homes and farms of the entire Nation, the suppliers may have considerable difficulty in finding substitute users for this energy in the event the Commission should cancel the contracts.

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> The estimated normal growth of power use in the three geographic areas is about 6 percent per year, and these suppliers probably could not immediately absorb the extra capacity. Therefore, some adequate cancellation payment provision is needed in the event that the Government should cease to purchase the power from these facilities [at 2].

Conditions of the very kind that were considered when AEC was given authorization to enter into such contractual arrangements have now occurred, although with more severe consequences for TVA (and thus the ratepayers of the region) than contemplated at the time the existing contracts were entered into for supplying power for DOE facilities at Oak Ridge and Paducah.

Tremendous sums of money have been spent by TVA to provide the capacity necessary to supply the very large amounts of power requested and contracted for these facilities. As a result of rapidly escalating costs resulting from the inflation that has been affecting the Nation's economy for several years, the cost of providing

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such capacity has been much higher than originally projected. However, DOE's substantial operational cutbacks are resulting in significant present and future reductions in the amount of power being used at the facilities. This comes at a time when power loads other than DOE are only projected to increase by 1-2½ percent a year as opposed to past growth of 6-8 percent annually. As a result of these conditions, the capacity charges, or minimum payment obligations, of DOE under the existing contracts are not even sufficient to cover the funds that have been expended by TVA to provide generating facilities to meet present contract demands, much less adequate to help offset those continuing fixed facility costs that must be borne by TVA ratepayers after the expiration of the existing contracts. Present projections are that renewal contracts will be for significantly lower contract demands.

In conclusion, we appreciate the opportunity to explain how TVA through long-term contractual arrangements and minimum payment obligations attempts under its agreements with directly served customers to recover at least a portion of those fixed costs that are incurred in providing facilities to provide the amounts of power requested by those customers. Otherwise, such costs would have to be shifted unfairly to other customers through higher rates. This would substantially impact the ratepayers of the region in the case of DOE, because of its large power requirements. We would be happy to provide any further information or data that would aid this subcommittee in examining these matters.

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Mrs. BOUQUARD. Thank you very much, Mr. Sanger and Mr. Parris.

Why is TVA in such a different situation than other supplier utilities in waving this capacity charge to DOE?

Mr. SANGER. We don't really know fully the circumstances of other power suppliers, but it must be remembered that this is a tremendously big load, as Mr. Parris' testimony pointed out. This just dwarfs, even, other loads we have on our system which in themselves are large. TVA considers it a proper business judgment and fair to all of its ratepayers to require those who are responsible for TVA undertaking this kind of expenditure, these huge expenditures, to be responsible for that charge and not place those charges on some other customers.

Mrs. BOUQUARD. DOE has stated in its fiscal year 1983 budget request that the average unit cost of power provided by TVA in fiscal year 1982 is expected to be 48 mils per kilowatt, is this about the right charge?

Mr. PARRIS. That would be a very good estimate.

Mrs. BOUQUARD. It is my understanding that TVA is limited by its charter with respect to the sale of electricity outside the service area. Would you go into detail a little bit on that?

Mr. PARRIS. Mr. Sanger can probably do better in summarizing that than I since it is stated in legal terms.

Mr. SANGER. Well, as a part of the 1959 legislation which gave TVA the authority to issue revenue bonds backed solely by the power sales, Congress provided that TVA could not be a source of power for outside the area for which it was not the primary source as of July 1, 1957.

Now, as an express exception to that prohibition, the statute authorizes TVA to enter into exchange power arrangements with entities with which TVA had such an arrangement as of July 1, 1957.

So, the substance of those limitations is that TVA can directly dispose of power within the 80,000 square miles for which TVA is the primary power supplier, and it can enter into exchange power arrangement outside that area so long as TVA had such an arrangement with a contracting party in 1957.

Those arrangements can take many different forms, and Congress was aware that it could be an exchange of power in kind, or it could be what looks very much like a sale where the receiver pays in cash, or in dollars, rather than returning it in kind. That is the limitation that you ask about.

Mrs. BOUQUARD. Well, if DOE could sell excess power to a utility outside TVA's service area that could be burning coal or at some cost less than the production cost, and if there could be some changes made in the Atomic Energy Act, would TVA be receptive to any sort of arrangement?

Mr. SANGER. I do not know. I assume that is something that TVA would want to consider very carefully. Of course, as long as TVA has on its system capacity that it is not itself disposing of, by permitting DOE, by waiving that contract provision, we would be in effect cutting DOE's losses and maximizing our own.

Mrs. BOUQUARD. Sales outside the service area is what I was referring to.

Mr. SANGER. Outside the area to which we could be a supplier? I would think TVA could look at whatever options were available.

Mrs. BOUQUARD. Thank you very much.

Mr. Lujan.

Mr. LUJAN. This law you are citing, is that what prevented you from selling the power to Houston?

Mr. SANGER. Well, certainly that statute makes any kind of arrangement TVA might have had with Houston much more difficult than it would have been normally between two contracting parties.

The only way TVA power could have been gotten to Houston—by the way, those discussions were very preliminary, they never reached any status of proposals, but——

Mr. LUJAN. Even if you had sold it to Houston you still would not cut out the $151 million the Government owes you?

Mr. SANGER. No, because we have that capacity on our system with which TVA could meet any such load now without regard to our obligations to the DOE load.

Mr. LUJAN. You say you are going to have to absorb costs over 35 years, that you have a 35-year plant. But as a matter of fact, you recovered all that money in the 10 years in the contract. You will acquire way over $1 billion in 10 years, won't you? And at that time the powerplants didn't cost the $3 billion Mr. Parris referred to.

Mr. SANGER. The demand charge, capacity charge, covers essentially our fixed cost per each kilowatt or megawatt of demand. And those fixed costs as I understand it are not recovered by any means in 10 years.

Mr. PARRIS. No, that is correct. They are recovered over the life of the facilities, which is about 35 years in most cases.

Mr. LUJAN. Did you have to build any new powerplants to furnish this electricty to DOE?

Mr. PARRIS. TVA committed back in the late 1960's and early 1970's to a major expansion of its generating capacity.

Mr. LUJAN. How much generating capacity did you build during the 1970's?

Mr. PARRIS. We now, from the late 1960's, let me think just a second. We have I guess put in seven large 1,200 megawatt type units that were planned in the late 1960's, early 1970's, while this expansion of the DOE contract loads were under discussion back at that time.

Mr. LUJAN. So, you did have to build additional capacity?

Mr. PARRIS. Yes.

Mr. LUJAN. Are you having any trouble at all meeting your customer demands?

Mr. PARRIS. No, sir.

Mr. LUJAN. Do you have excess power?

Mr. PARRIS. Yes, sir, we have excess power.

Mr. LUJAN. You just canceled three powerplants. Was it three?

Mr. PARRIS. We did not cancel. We deferred them. We are going to have a halt in the construction, but the units have not been canceled. Our plans are, depending on how our load growth goes, if the load growth is high enough, to restart the construction of those units later on in this decade.

Mr. LUJAN. Would you want us to change the law that says DOE can't sell some of their power, or would you rather we didn't?

Mr. PARRIS. It suits me all right just like it is.

Mr. LUJAN. Mr. Walker is here. I was going to pursue the GPU question, but I yield to him.

Mr. WALKER. Thank you, Mr. Lujan, for yielding.

I would just like to pursue with you what problems might have come up at the time that there was an investigation into the potentiality of wheeling some power up to GPU when it appeared they would be facing shortages.

Mr. PARRIS. Well, we have had discussions with all our interconnected neighbors, the ones Mr. Sanger mentioned, and have made them aware that we have some excess capacity on our system and that we would be very happy to make arrangements to move that power outside our service area. And because of the limitations that we have, we have not really gone beyond our neighbors, the ones we can deal with. But it is my understanding that our neighbors have investigated beyond their systems to see what power could be moved into other areas. And we have not found from our neighbors any strong inclinations to get serious about moving some of that power, at least in the near term.

Mr. WALKER. So, in other words, as far as TVA knows at the present time, no one has expressed an interest in having your power wheeled to GPU, is that what you are saying?

Mr. PARRIS. We have had some very, very informal contacts with GPU, but we cannot deal directly with GPU, so they have just been informal and frankly, pretty casual.

Mr. WALKER. I have heard it said that part of the problem was that while the rates of the power that would go to GPU would be less, the transmission costs would offset that. Is that true from what you understood in the informal contacts that you had?

Mr. PARRIS. I do not know whether it is a certainty. I do know that it is fairly difficult to move power from our system into the GPU system because of various transmission bottlenecks in the transmission network.

But I do not know about the losses, that sort of thing, as a matter of fact.

Mr. WALKER. Didn't you ship power to New York City during the brownout in 1970?

Mr. PARRIS. Yes, but that was through arrangements with our neighbors to the north. We made arrangements with our neighbors and they, in turn, made arrangements to move that power on to the east.

Mr. WALKER. But that is in the same grid as GPU, so it seems to me that the same kind of facilities could be used to move it into the GPU grid, couldn't it?

Mr. PARRIS. Yes, sir.

Mr. WALKER. Do I understand correctly from the testimony you have given here today that you would like to be able to sell that power to GPU if it was in the realm of possibility? Is that a fair statement?

Mr. PARRIS. Yes, sir, we would like to do anything that would improve the outlook for our ratepayers in an excess capacity situation.

Mr. WALKER. Let me ask you this. What would have to be done here, in Congress, or on the Federal Government level, in order to allow you to get that power from your system to GPU?

Mr. PARRIS. I will defer to Mr. Sanger.

Mr. SANGER. There would be essentially two ways of accomplishing that.

One, TVA could, as was part of the arrangements with the transmission of power to the New York company to which you referred, TVA could contract with the American Electric Power System. That is one of the interconnecting companies with TVA. It was in 1957. TVA's disposition of power legally would have to be to the American Electric Power Co., and from there to the GPU system.

The only other option would be some change in the limitation that now exists on TVA's contracting authority.

Mr. WALKER. Could you sell the power at a rate which would reflect the fact the Federal Government is spending $151 million anyhow in purchasing power? In other words, could that be a part of the rate structure that would then be reflected in GPU's rates?

Mr. PARRIS. That would not be the approach we would take, no, sir. It is our position that the minimum payment provisions are such that any power that could be sold would be for the benefit of the ratepayer and to help pay for those facilities over their life that was installed.

Mr. WALKER. Do you all participate in the Edison Electric Institute?

Mr. PARRIS. No, sir.

Mr. WALKER. So, their position with regard to Three Mile Island would have no bearing on your dealings with the issue, is that correct?

Mr. PARRIS. Not directly, no, sir.

Mr. WALKER. Would there be any potential engineering problem cropping up? I think what Mr. Sanger has covered is essentially the legal problems. Are there any engineering problems that we would run into in attempting to wheel power north?

Mr. PARRIS. It is very possible. I do not know exactly what the capability would be to move power into the GPU system. We have very strong interconnections with our neighbors to the north, the American Electric Power Co. But I do not know in detail the transmission facilities between the AEP and GPU. It is possible. I just don't know. That could be answered as a matter of fact by doing some engineering studies, though.

Mr. WALKER. Then it is my understanding that even if it were to take place, the fact that the Federal Government is paying a substantial minimum payment rate would not figure in. You would be in a position of selling to GPU at full price, and it is likely that price, plus transmission costs, might not add up to very much of a savings for GPU customers and for the company. Ultimately, what we are trying to do is get a better cash flow so we can get TMI cleaned up. That is what we are trying to achieve doing this. It does not sound to me as though there is much of a way in which you would cooperate with that; is that a fair impression?

Mr. PARRIS. I wouldn't want to leave the impression we wouldn't be cooperative in that. Our power we would have available would be generally coal-fired energy, and it certainly ought to be competi-

tive within any reasonable transmission distance with oil-fired capacity, which I understand it used quite heavily in that area.

Mr. WALKER. Well, certainly the surplus that GPU is presently buying would be probably oil-fired capacity. They are also buying a lot of coal-fired capacity from Pennsylvania Power & Light at the present time—some of the surplus in that system.

Would there be problems, do you believe, with companies in that area who are presently selling surplus power to GPU of their own? Do you think there would there be significant problems do you think if TVA, all of a sudden, became involved in attempting to sell power to GPU?

Mr. PARRIS. Most likely.

Mr. WALKER. Thank you, Madam Chairman.

Mr. LUJAN. Can I reclaim my time a little?

Ms. BOUQUARD. Mr. Lujan.

Mr. LUJAN. You know our budget situation and those $151 million. Let's change places a little bit—see what you can suggest.

We could use those $151 million to take care of little children and widows and orphans, all of those needs that we have to meet. How would you go about freeing that money—what would you tell me? How can we get out of this thing? I can understand your position. Your job is to run TVA and keep a low rate for the ratepayers. But we have a responsibility; we are looking at everything.

We really need to do something about expenditures. Here is an expenditure that we are not getting anything for. Could you give me any advice as to what you would do were you on this side of the aisle, in order to be able to get out of really throwing $151 million down the drain? Not from your standpoint, but from the benefits that the Government receives. What could you tell me?

Mr. PARRIS. I am not sure that I can give you a whole lot of advice. But I would like to put into perspective a little bit what I am——

Mr. LUJAN. I understand the perspective. We have a contract and we have to pay it. What I would hope that this hearing will make clear is that we are not going to get anything from the contract other than the availability of power, but we are not using it. So, it is not really doing us a lot of good now. We could use that money for some of these other pressing needs we have.

I am just wondering if there is some way. One, you have indicated DOE can't sell that power. Maybe we'll have to change that law. Two, you can't sell out of your area. Maybe we ought to change that, too, so that you can sell power in return for your giving us a little break on the $151 million.

What other things could we do?

Mr. PARRIS. I do not know that there is any other thing. But I think there is one very important point that—because TVA has made major expenditures in order to make this power available. We have to meet our costs; if this money is not collected from DOE, it has got to be collected from other ratepayers in the Tennessee Valley region. And unfortunately, we have a situation where we have a lot of low-income people, as well as industries that are in dire straits.

Mr. LUJAN. Those same children and widows and orphans that I am talking about.

Mr. PARRIS. Very analogous, yes, sir.

Mr. LUJAN. Well, we find ourselves in a very difficult situation. Are you having troubles in meeting your payrolls? Are you that tight?

Mr. PARRIS. No, sir.

Mr. LUJAN. That you couldn't do without the $150 million? Would it really put you in a tailspin?

Mr. PARRIS. If we reduced our revenues from DOE by $150 million, we would have no choice but to collect it from our ratepayers in order to meet our financial obligations.

Mr. LUJAN. How much would that mean to an average house?

Mr. PARRIS. That would represent—let me think just a second. It would represent something on the order of a 10-percent increase to our residential customers.

Mr. LUJAN. Unless you were able to sell someplace else to make that up?

Mr. PARRIS. It would, in any event.

Mr. LUJAN. Thank you, Madam Chairman.

Mrs. BOUQUARD. Thank you very much, Mr. Lujan.

Mr. Parris, Mr. Sanger, we thank you for being with us today. We appreciate your testimony. If there are no further comments, the subcommittee will meet again tomorrow at 2 o'clock. We will have hearings on breeder reactor systems and reprocessing. The subcommittee stands adjourned.

[Whereupon, at 2:50 p.m., the subcommittee adjourned to reconvene the following day at 2 p.m.]

APPENDIX

QUESTIONS AND ANSWERS SUBMITTED FOR THE RECORD

DON FUQUA, FLA., CHAIRMAN
ROBERT A. ROE, N.J.
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NORMAN D'AMOURS, N.H.
LARRY WINN, JR., KANS.
BARRY M. GOLDWATER, JR., CALIF.
HAMILTON FISH, JR., N.Y.
MANUEL LUJAN, JR., N. MEX.
HAROLD C. HOLLENBECK, N.J.
ROBERT S. WALKER, PA.
EDWIN B. FORSYTHE, N.J.
WILLIAM CARNEY, N.Y.
MARGARET M. HECKLER, MASS.
F. JAMES SENSENBRENNER, WIS.
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JUDD GREGG, N.H.
RAYMOND J. MC GRATH, N.Y.
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MINORITY STAFF DIRECTOR

March 11, 1982

Dr. Shelby T. Brewer
Asst. Secty. for Nuclear Energy
U. S. Department of Energy
Washington, D.C. 20585

Dear ~~Dr. Brewer~~ Shelby:

I am writing to thank you and Mr. Voigt for your testimony at our Subcommittee hearing on Uranium Enrichment Demand Charges on March 8, 1982. Chairman Bouquard felt that it was most helpful in explaining the details concerning this subject.

The Chairman would like to supplement the record with your response to some additional questions that the Subcommittee has regarding the subject of the hearing. It would be helpful if we could receive your response to the enclosed questions by April 5, 1982.

Thank you for your cooperation. If there are any questions regarding this request, please contact Mr. Louis Ventre, Jr., Counsel for the Subcommittee, at 225-2981.

Sincerely,

JOHN V. DUGAN, JR., Staff Director
Subcommittee on Energy Research
and Production

JVD:Vjs
Enclosure

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- Is the uranium enrichment operating plan based upon the nuclear capacity projections in Table 1 of your testimony?

- Is it true that most of your contracts to supply enrichment services permit adjustments to be made in the scheduled enrichment deliveries five years or more ahead in time? If yes, may we assume that your projections of the nuclear capacity to be served by the enrichment complex beyond this five-year horizon reflect the actual nuclear electricity production for these years?

- Are these projections lower than your January 1981 projections provided to the Committee last year; and if yes, what was the basis for lowering them in terms of U.S. and foreign requirements?

- Please comment on the fact that your projections in Table 1 are lower in all categories than those in the DOE's Supplement to the National Energy Policy Plan issued in July 1981 and prepared by DOE's Office of Policy Planning and Analysis?

- If the enrichment operating plan is to be conservative so to ensure a sufficient supply of services for domestic customers, why aren't your planning projections at least as high as those in the National Policy Plan?

- If your power projections were increased to the levels in the National Energy Policy Plan, would your near-term operating plan and stockpile states change; and if yes, would that mean that demand charges could be lowered in the out years?

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- Has DOE considered asking TVA to offer a discount on this surplus electricity to make it attractive for a utility to offset oil or gas fueled power production? In this way, the DOE and TVA could be serving the national interest in lowering oil and gas consumption pursuant to the Powerplant and Industrial Fuel Use Act, and could be mitigating this 25% capacity charge. Theoretically, TVA could offer up to a 24% discount and still come out ahead.

- Would DOE favor lifting the restriction in Section 44 of the Atomic Energy Act, which prohibits DOE from directly selling its excess contract electricity? Please explain.

- Since TVA is restricted in considering the power needs of parts of the region beyond its legal ability to serve, should the Congress consider legislation to require a study of power needs and utility capacity in an around the Southeastern region of the United States?

- What power budget level would be required to take the contract amounts of electricity and correspondingly, how much would the stockpile grow?

- If the contract amount of electricity is taken, how much extra would have to be appropriated to cover the power costs?

- Have you asked TVA to look into various options, for example, wheeling the power, through a utility to whom TVA may sell power, to other government-funded complexes such as the Princeton Plasma Physics Lab, Brookhaven, Fermi Labs, etc.?

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- Is your current operating plan based upon minimizing the cost to the customer, or minimizing appropriations? Please explain.

- Does DOE anticipate that the price of electricity from TVA will increase faster than the rate of inflation?

- If electricity does increase faster than inflation, then would it be cost effective to pre-produce?

- We have a chart from you indicating that you have negotiated a waiver of demand charges from two supplier utilities. Please explain the essence of your agreements with these utilities (Ohio Valley Electric Co. and Electric Energy, Inc.).

- In the past, we have been told that DOE updates its estimates of the nuclear electrical generating capacity that the uranium enrichment complex will need to service every six months. Yet your testimony presents estimates from August 1981. When can we expect a more recent set of estimates?

- On page 5 of your testimony you state: "We evaluated numerous scenarios including (1) deferring substantially the GCEP by pre-producing and (2) maintaining the current GCEP schedule and purchasing contract power in the near term and reducing power in the 1990s when it could be done without payment of capacity charges. In all cases, pre-production in lieu of payment of near-term capacity charges resulted in higher long-term departmental and customer costs on both a discounted and undiscounted basis."

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(a) What are the details of the definitions of the "numerous scenarios" evaluated, and what backup documentation exists?

(b) What cost differences, on both a discounted and undiscounted cost basis, arose between the pre-production and current operating plan cases?

- In view of the past success DOE has had in obtaining capacity charge relief from OVEC, what probability do you think the Department has in obtaining relief of the $22 million in demand charges anticipated for FY 1983? When does DOE expect to receive OVEC's decision regarding these charges?

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QUESTIONS AND ANSWERS

For

Hearing on Uranium Enrichment Demand Charges

on

March 8, 1982

William Voigt, Witness
U.S. Department of Energy

Marilyn Bouquard, Chairman
Subcommittee on Energy Research and Production
Committee on Science and Technology

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Question 1. Is the uranium enrichment operating plan based upon the nuclear capacity projections in Table 1 of your testimony?

Answer 1. Yes, it is based on the mid-case projection of nuclear power growth shown in Table 1 of the testimony.

Question 2.a. Is it true that most of your contracts to supply enrichment services permit adjustments to be made in the scheduled enrichment deliveries five-years or more ahead in time?

Answer 2.a. Yes, most of DOE's enrichment contracts are fixed-commitment contracts which cover commitments for a five-year period, with a 10 percent and 20 percent adjustment in quantities allowed for the fourth and fifth years, respectively. Quantities beyond the five-year period are nonbinding estimates which can be adjusted as they move into the firm period. The horizon for Requirements contracts is even shorter, as only 180 days is required to firmup a delivery.

Question 2.b. If yes, may we assume that your projections of the nuclear capacity to be served by the enrichment complex beyond this five-year horizon reflect the actual nuclear electricity production for these years?

Answer 2.b. Yes, projections of nuclear fuel requirements beyond the five-year horizon are adjusted to represent expected nuclear generation, taking into account construction progress to date and realistic estimates of reactor start-up dates.

Question 3. Are these projections lower than your January 1981 projections provided to the Committee last year; and if yes, what was the basis for lowering them in terms of U.S. and foreign requirements?

Answer 3. Yes, we lowered our projections to reflect delays, cancellations, etc. which have occurred since last year. We decreased our long-term estimate of future nuclear electricity production by about 5 percent based on our most recent customer information.

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Question 4. Please comment on the fact that your projections in Table 1 are lower in all categories than those in the DOE's Supplement to the National Energy Policy Plan issued in July 1981 and prepared by DOE's Office of Policy Planning and Analysis?

Answer 4. Our estimate was made later in time than the projections referred to. Those projections were, in fact, the Energy Information Administration (EIA) forecast shown in the 1980 Annual Report to Congress published in March 1981. EIA's most current "mid" forecast published in February 1982 is one gigawatt lower by 1990 and four gigawatts lower by 1995 than the "mid" projection shown in Table 1 of the testimony.

Question 5. If the enrichment operating plan is to be conservative so to ensure a sufficient supply of services for domestic customers, why aren't your planning projections at least as high as those in the National Policy Plan?

Answer 5. We maintain flexibility in our operating plans to respond to unexpected increases in demand. For example, our current plan still permits an option to increase the transaction tails assay in the future thus permiting higher operating tails assays and increased enriched uranium production if needed because of higher demand.

Question 6. If your power projections were increased to the levels in the National Energy Policy Plan, would your near-term operating plan and stockpile states change; and if yes, would that mean that demand charges could be lowered in the out years?

Answer 6. If we had used the higher demand, near-term production and stockpile levels would have been higher. For that scenario, demand charges past FY 1983 would likely be lowered.

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Question 7. Has DOE considered asking TVA to offer a discount on this surplus electricity to make it attractive for a utility to offset oil or gas fueled power production? In this way, the DOE and TVA could be serving the national interest in lowering oil and gas consumption pursuant to the Powerplant and Industrial Fuel Use Act, and could be mitigating this 25% capacity charge. Theoretically, TVA could offer up to a 24% discount and still come out ahead.

Answer 7. To date, the question of price has not been a major consideration in TVA's attempts to offset oil or gas fired generating capacity. The biggest problem is access to the markets which utilize gas or oil. For example, Florida is heavily dependent upon oil-fired generating capacity. There is only a limited amount of transmission capacity into Florida and this capacity is being fully utilized by the Southern Co. to sell its excess power. TVA would be price competitive in Florida but cannot gain access to the market. Also, TVA could sell power to the Southwest, to Texas and the Gulf states, if it had access to the market. However, Middle South Utilities and the Southern Co. are located between TVA and the potential market and can service this market.

Question 8. Would DOE favor lifting the restriction in Section 44 of the Atomic Energy Act, which prohibits DOE from directly selling its excess contract electricity?

Answer 8. We have examined in detail the legislative history underlying Section 44 of the Atomic Energy Act and have concluded that there is no need to amend that provision. The purpose of Section 44 was to permit DOE's predecessor (the Atomic Energy Commission) to dispose of energy it produces in the course of its own operations, but to preclude it from entering the power-producing business in competition with private and/or Congressional authorization to construct or operate such commercial facilities. The restriction on the commercial sale of power by DOE (of power not produced incident to the operation of research and development or production facilities) was intended to apply only to power which is both produced and sold by DOE. Accordingly, since DOE did not generate the power which it has purchased under long-term contracts from utility suppliers for use in its enrichment plants, Section 44 of the Act does not prevent DOE from selling that power.

However, there are still several major constraints facing DOE in its attempts to sell its excess power. The first constraint is the terms of the DOE/TVA contracts. Section 15 of the contracts states that DOE can only resell the power if agreement is given by TVA. Section 19 of the contract states that assignment of the contracts by DOE to another party is possibly only if TVA agrees. If a market exists for the power, TVA prefers to serve that market, if possible, before allowing DOE to do so. The second major constraint facing DOE is that it does not own any transmission facilities. Any movement of the power would be done over TVA transmission facilities and would require the cooperation and assistance of TVA.

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Question 9. Since TVA is restricted in considering the power needs of parts of the region beyond its legal ability to serve, should the Congress consider legislation to require a study of power needs and utility capacity in and around the Southeastern region of the United States?

Answer 9. A study of the power capability and needs of the Southeastern U.S. and how that region interacts with other parts of the country could be useful. It might identify previously unknown markets for excess power and it might also identify the steps which need to be taken in order to more efficiently utilize our power generating resources. Legal and technical barriers currently restrict the movement of excess power to areas which could use the power to meet the demand for electricity or to supplant more expensive sources of power. A regional or national solution to this problem could benefit the country. However, the Office of Uranium Enrichment and Assessment does not possess the expertise or the resources to accomplish such a study.

Question 10. What power budget level would be required to take the contract amounts of electricity and correspondingly, how much would the stockpile grow?

Answer 10. The contract demand for FY 1983 is 4,548 megawatt-years. In order to purchase all this power, a cascade power budget of $1,298 million would be required. The incremental production associated with purchasing the contract demand is 7.1 million SWU. Since our 1983 budget calls for a reduction of the stockpile by 5.6 million SWU, the incremental production of 7.1 million SWU would increase the stockpile by 1.5 million SWU.

Question 11. If the contract amount of electricity is taken, how much extra would have to be appropriated to cover the power costs?

Answer 11. Purchasing the contract demand in FY 1983 would increase the power budget by $394 million, from $904 million to $1,298 million.

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Question 12. Have you asked TVA to look into various options, for example, wheeling the power, through a utility to whom TVA may sell power, to other government-funded complexes such as the Princeton Plasma Physics Lab, Brookhaven, Fermi Labs, etc.?

Answer 12. We are currently studying the possible arrangements for wheeling surplus DOE contract capacity to DOE installations in areas outside of the TVA service areas. However the wheeling of TVA power to another government facility is often not possible because transmission capacity to move the power may not be available, another utility situated between TVA and the facility can supply the power, or, the utility which would normally serve the facility may have sufficient capacity to continue to serve the facility at a lower delivered cost.

Question 13. Is your current operating plan based upon minimizing the cost to the customer, or minimizing appropriations? Please explain.

Answer 13. We have attempted to develop an operating plan whose components will result in minimum long-term costs, both to the Government and the customer. In almost all cases, minimizing Government costs of producing enriched uranium will also minimize costs to the customer. In the near-term, however, we are very conscious of the large budget deficits that are projected over the next several years and have attempted to operate in a manner that will permit us to minimize our appropriation requirements.

Question 14. Does DOE anticipate that the price of electricity from TVA will increase faster than the rate of inflation?

Answer 14. Based on past experience, we would expect the TVA rates to increase faster than the rate of inflation. For the period FY 1977 through 1981, the average annual increase in the price of TVA power to DOE was 16 percent. The rate of increase has moderated in recent years, we expect a 13 percent increase from FY 1981 to 1982 and a 10 percent increase from FY 1982 to FY 1983.

In its January 1982 report, "Review of the TVA Load Growth/Plant Construction Schedule," TVA stated that it expected the price of power to escalate at or slightly below the rate of inflation.

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Question 15. If electricity does increase faster than inflation, then would it be cost effective to preproduce?

Answer 15. Our analysis, to date, have not shown preproduction to be cost effective even with electricity costs increasing faster than inflation.

Question 16. We have a chart from you indicating that you have negotiated a waiver of demand charges from two supplier utilities. Please explain the essence of your agreements with these utilities (Ohio Valley Electric Corp. and Electric Energy, Inc.).

Answer 16. Our agreement with OVEC will reduce our contract demand in FY 1982 through FY 1988. Our contract demand in FY 1982 is 785 megawatt-years (MW), for FY 1983 through 1986 it will be 1,260 MW, for FY 1987 it will be 1,340 MW, and in FY 1988 it will be 1,660 MW. DOE is receiving full cost relief (energy and capacity) for these reductions. However, the agreement includes the provision that if this power becomes uneconomic to OVEC, it can, upon 60 days notice, increase DOE's contract up to a maximum of the original contract demand (1,940 MW) for a minimum of 90 days. In other words, OVEC will only make the reductions as long as it is to the benefit of OVEC to do so. DOE has recently asked OVEC to make an additional reduction in FY 1983, from 1,260 MW to 785 MW. OVEC has the request under consideration.

With EEI, our contract demand will be reduced from 735 MW to 76 MW in FY 1982 and to 123 MW in FY 1983. In addition, at EEI's option, it can make reductions of up to 245 MW in both FY 1988 and 1989. DOE is receiving full cost relief for these reductions.

Question 17. In the past, we have been told that DOE updates its estimates of the nuclear electrical generating capacity that the uranium enrichment complex will need to service every six months. Yet your testimony presents estimates from August 1981. When can we expect a more recent set of estimates?

Answer 17. We decided last year to update our forecasts on an annual basis consistent with the budget cycle timing rather than on a semi-annual basis. We decided to do this because of staff limitations and an anticipated leveling in the rate of change of successive forecasts.

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Question 18. On page 5 of your testimony you state: "We evaluated numerous scenarios including (1) deferring substantially the GCEP by preproducing and (2) maintaining the current GCEP schedule and purchasing contract power in the near-term and reducing power in the 1990's when it could be done without payment of capacity charges. In all cases, preproduction in lieu of payment of near-term capacity charges resulted in higher long-term departmental and customer costs on both a discounted and undiscounted basis."

(a) What are the details of the definitions of the "numerous scenarios" evaluated, and what backup documentation exists?

Answer 18.a. Three production scenarios were examined for two different demand assumptions. The three production scenarios were the base case with reduced power levels in the early years and payment of demand charges, and two different preproduction cases; one with full contract power and no reduction until the 1990's (thereby, avoiding demand payments) and the GCEP on schedule, and the other with an indefinite delay of the GCEP. The results are documented on the attached table entitled "Preproduction Economics Comparison."

(b) What cost differences, on both a discounted and undiscounted costs basis, arose between the preproduction and current operating plan cases?

Answer 18.b. The results are shown on the table "Preproduction Economics Comparison." As can be seen, the preproduction cases were all more expensive for both the total enterprise cost (i.e., DOE cost plus customer feed cost) and the customer cost on a discounted and undiscounted basis. Further, the preproduction cases result in higher selling prices.

Question 19. In view of the past success DOE has had in obtaining capacity charge relief from OVEC, what probability do you think the Department has in obtaining relief of the $22 million in demand charges anticipated for FY 1983? When does DOE expect to receive OVEC's decision regarding these charges?

Answer 19. At this time, the prospect of obtaining relief from the $22 million in capacity charges for power not purchased is not good. OVEC is receiving heavy criticism from the State of Ohio concerning its previous agreements with DOE which reduced our contract demand. The State of Ohio generally feels that OVEC would have gained access to the power without granting relief to DOE and, therefore, the other power users in Ohio are subsidizing DOE. We do not expect to receive a decision from OVEC before June 1982.

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